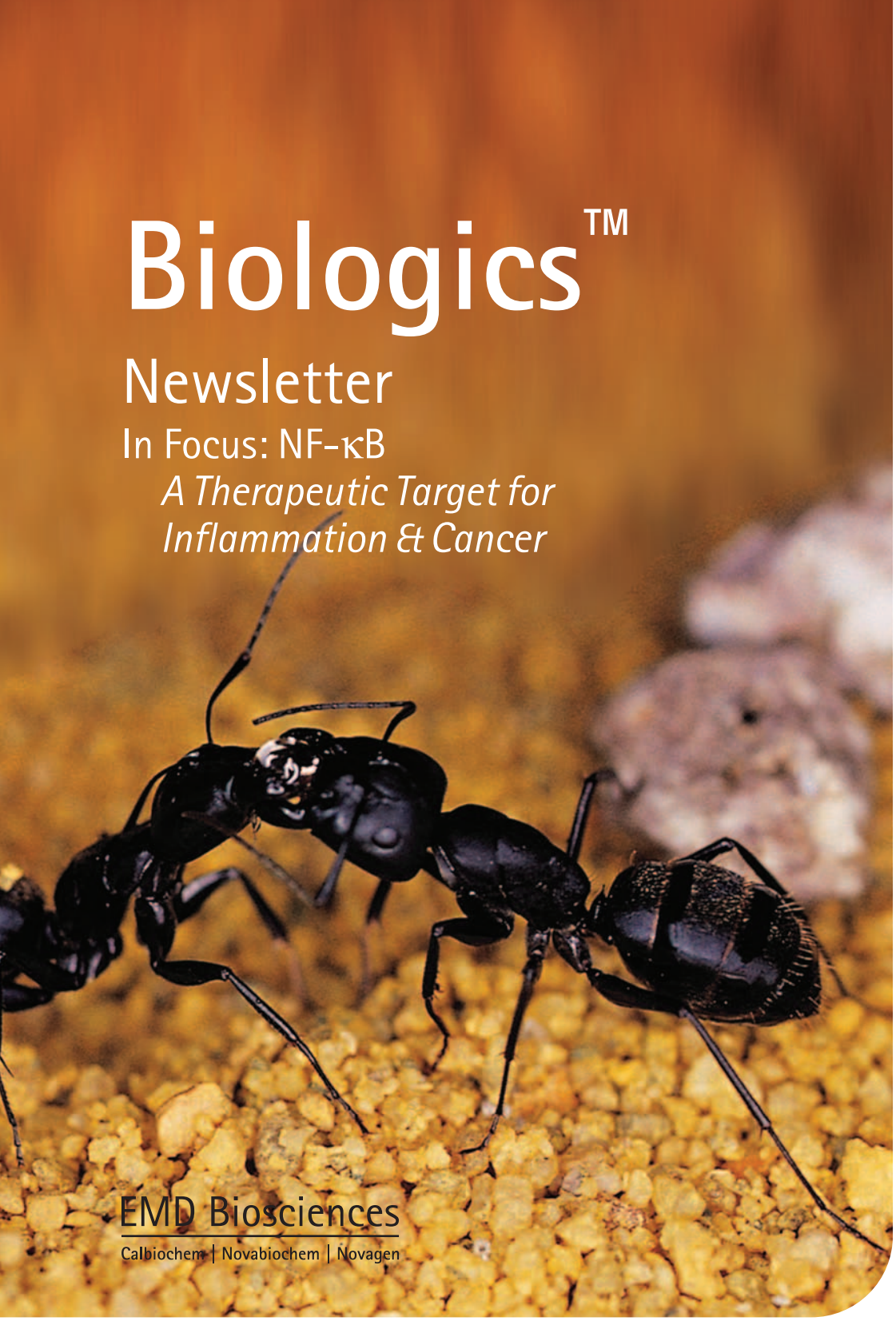

Biologics™

Newsletter

In Focus: NF-κB

A Therapeutic Target for Inflammation & Cancer

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Volume 30, No. 1, 2004

Inside this Issue...

...including Oncogene Research Products™

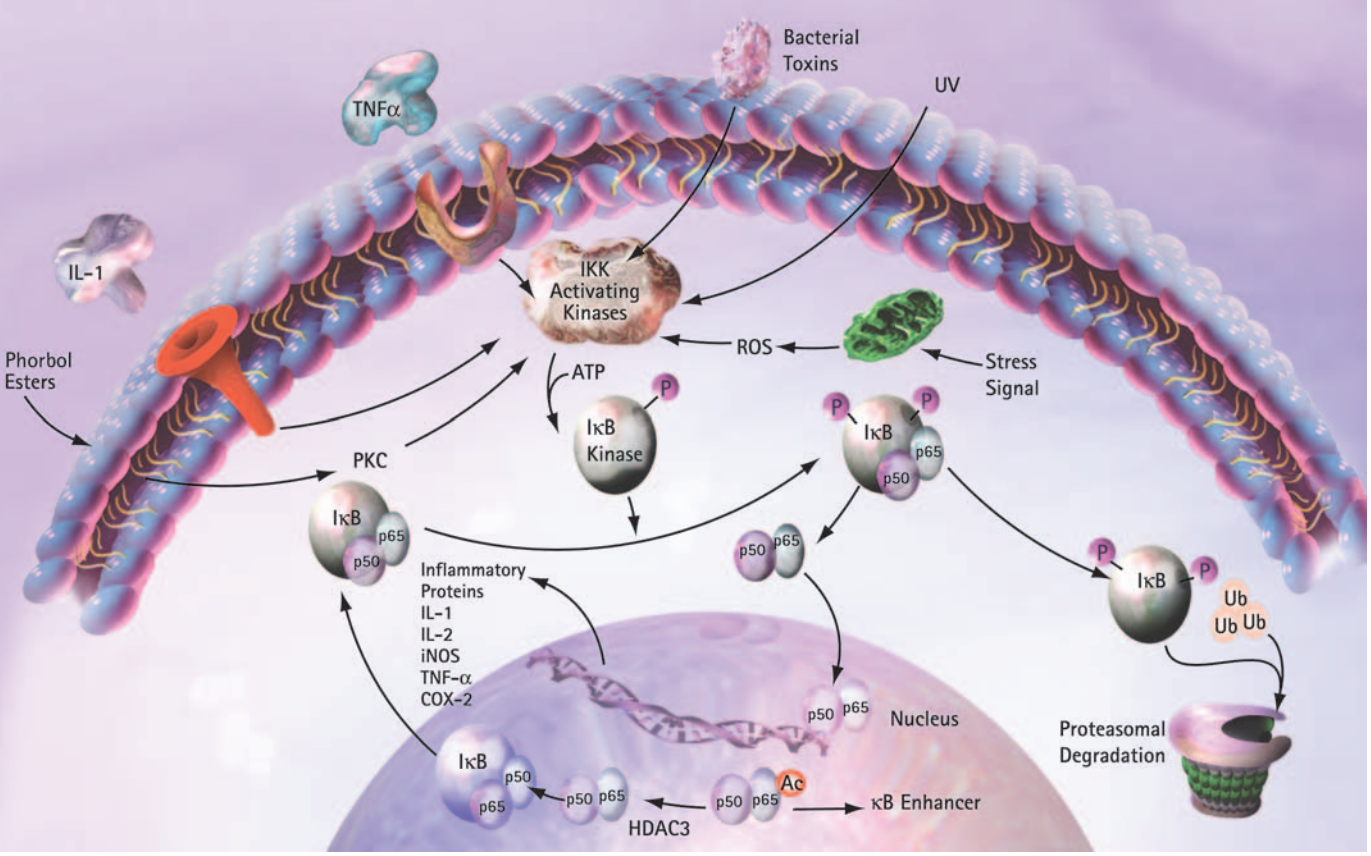
EMD

NF-κB:
A Therapeutic Target for Inflammation & Cancer

The eukaryotic nuclear factor κB (NF-κB) plays an important role in inflammation, autoimmune response, cell proliferation, and apoptosis by regulating the expression of genes involved in these processes. Five members of the NF-κB family have been identified: NF-κB1 (p50/p105), NF-κB2 (p52/p100), RelA (p65), RelB, and c-Rel. They share a highly conserved Rel homology domain (RHD), which is responsible for DNA binding, dimerization, and interaction with IκB. The p50/RelA(p65) heterodimer is the major Rel/NF-κB complex in most cells. RelB can act as both a transcriptional activator as well as a repressor of NF-κB-dependent gene expression. It acts as an activator when it associates with p50 or p52. However, its inhibitory effect has been attributed to the formation of the RelA(p65):RelB heterodimer that does not bind to κB sites. Studies on NIH 3T3 cells have also shown that RelA(p65):RelB heterodimers are not regulated by IκB and are located in both the cytoplasm and the nucleus.

The activity of NF-κB is tightly regulated by its interaction with inhibitory IκB proteins. In most resting cells, NF-κB is sequestered in the cytoplasm in an inactive form associated with inhibitory molecules such as IκBα, IκBβ, IκBε, p105, and p100. This interaction blocks the ability of NF-κB to bind to DNA and results in the NF-κB complex being primarily localized to the cytoplasm due to a strong nuclear export signal in IκBα. Following exposure to inflammatory cytokines, UV light, reactive oxygen species, or bacterial and viral toxins, the NF-κB signaling cascade is activated, leading to the complete degradation of IκB. This allows the translocation of unmasked NF-κB to the nucleus where it binds to the enhancer or promoter regions of target genes and regulates their transcription. In the nucleus, acetylation of NF-κB determines its active or inactive state. p300 and CBP acetyltransferases play a major role in the acetylation of RelA(p65), principally targeting $Lys^{218,\ 221,\ 310}$ for modification. Acetylated NF-κB is active and is resistant to the inhibitory effects of IκB. However, when histone deacetylase 3 (HDAC3) deacetylates NF-κB, IκB readily binds to NF-κB and causes its translocation into the cytoplasm. Here HDAC3 serves as an intranuclear molecular switch that turns off the biological processes triggered by NF-κB. One of the target genes activated by NF-κB is that encoding IκBα. Newly synthesized IκBα can enter the nucleus, remove NF-κB from DNA, and export the complex back to the cytoplasm to restore its original latent state.

As mentioned above, the activation of NF-κB by extracellular inducers depends on the phosphorylation and subsequent degradation of IκB proteins. Activation of NF-κB is achieved through the action of a family of serine/threonine kinases known as IκB kinase (IKK). The IKK contains two catalytic subunits (IKKα and IKKβ) and a regulatory/adapter protein NEMO (also known as IKKγ). IKKα and IKKβ phosphorylate IκB proteins and the members of the NF-κB family. All IκB proteins contain two conserved serine residues within their N-terminal area, which are phosphorylated by IKK. IKKα and IKKβ share about 50% sequence homology and can interchangeably phosphorylate $Ser^{32/36}$ of IκBα, and $Ser^{19/23}$ of IκBβ. These phosphorylation events lead to the immediate polyubiquitination of IκB proteins and rapid degradation by the 26S proteasome.



The Rel/NF-κB signal transduction pathway is misregulated in a variety of human cancers, especially those of lymphoid cell origin. Several human lymphoid cancer cells are reported to have mutations or amplifications of genes encoding NF-κB transcription factors. In most cancer cells NF-κB is constitutively active and resides in the nucleus. In some cases, this may be due to chronic stimulation of the IKK pathway, while in others the gene encoding IκBα may be defective. Such continuous nuclear NF-κB activity not only protects cancer cells from apoptotic cell death, but may even enhance their growth activity. Designing anti-tumor agents to block NF-κB activity or to increase their sensitivity to conventional chemotherapy may have great therapeutic value.

Antibodies for NF-κB Signaling Pathways

Product	Cat. No.	Comments*	Size	US $
Anti-IκBα, Cleaved, Human (Mouse)	OP197	Detects the ~36 kDa amino-terminal truncated IκBα (DN-IκBα) that is resistant to degradation. **IB**	100 µg	304
Anti-IκBα, Phospho-Specific (Ser^{32}), Human (Rabbit)	400002	Reacts with phosphorylated IκBα. Does not react with IκBβ and IκBε. Reacts with human, mouse, and rat. **IB, IC, IP**	100 µl	295
Anti-IKKβ, Human (Mouse)	OP134	Immunogen used was a His•Tag® full-length human IKKβ protein. Recognizes an ~ 87 kDa band in Daudi cell lysates. **IB**	100 µg	233
Anti-IKKε/IKK-*i* (701-716), Human (Rabbit)	400004	Immunogen used was a synthetic peptide corresponding to amino acid residues 701 - 716 of human IKKε/IKK-*i*. Recognizes an ~80 kDa band in cell lysates. **IB**	100 µg	219
Anti-IKKγ (400-416), Human (Rabbit)	400003	Recognizes the ~52 kDa protein in cell lysates. Does not cross-react with IKKα or IKKβ. IKKγ phosphorylates IκB thus mediates NF-κB activity. Reacts with human, mouse, and rat. **IB**	100 µg	219

***Key: IB:** Immunoblotting; **IC:** Immunocytochemistry; **IP:** Immunoprecipitation

IKK-2 Inhibitor, SC-514

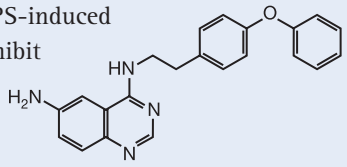
A cell-permeable, potent, reversible, ATP-competitive, and highly selective inhibitor of IKK-2 (IC_{50}'s ~ 3 - 12 µM for IKK-2 homodimer, IKK-1/IKK-2 heterodimer, and IKK-2). Its specificity has been confirmed using a panel of 31 other kinases, including IKK isoforms IKK-1, IKK-*i*, and TBK-1 (IC_{50} > 200 µM). Shown to specifically block NF-κB-dependent gene expression, but not MAP kinase pathways, in stimulated synovial fibroblasts RASF. *Purity: ≥98% by TLC.*

Cat. No. 401479 **1 mg** **$ 75**

Ref.: Kishore, N., et al. 2003. *J. Biol. Chem.* **278,** 32861.

NEW! NF-κB Activation Inhibitor

A cell-permeable quinazoline compound that acts as a potent inhibitor of NF-κB transcriptional activation (IC_{50} = 11 nM in Jurkat cells) and LPS-induced TNF-α production (IC_{50} = 7 nM in murine splenocytes). Shown to exhibit anti-inflammatory effect on carrageenin-induced paw edema in rat. *Purity: ≥98% by HPLC.* M.W. 356.4



Cat. No. 481406 **1 mg** **$ 75**

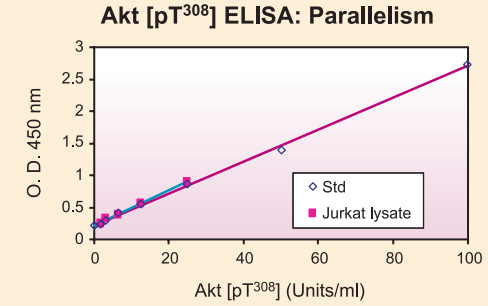
Ref.: Tobe, M., et al. 2003. *Bioorg. Med. Chem.* **11,** 383.

Interested in Protein Phosphorylation? Try our NEW! ELISA Kits....

Akt, Phospho-Specific (Thr^{308}) ELISA Kit

Detects Akt when phosphorylated on Thr^{308}. Sensitivity: ≤0.8 units/ml; Assay Range: 1.6-100 units/ml. Kit includes coated microtiter plate, Akt Phospho-Thr^{308} standard, diluents, detector antibody, secondary antibody, wash buffer, TMB substrate, stop solution, plate covers, and a directional insert.

Cat. No. CBA004 **1 Kit** **$ 575**



Akt, Phospho-Specific (Ser^{473}) ELISA Kit

Detects Akt when phosphorylated on Ser^{473}. Sensitivity: ≤0.8 units/ml; Assay Range: 1.6-100 units/ml. Kit includes coated microtiter plate, Akt Phospho-Ser^{473} standard, diluents, detector antibody, secondary antibody, wash buffer, TMB substrate, stop solution, plate covers, and a directional insert.

Cat. No. CBA005 **1 Kit** **$ 575**

ERK1/2, Phospho-Specific (Thr^{185}/Tyr^{187}) ELISA Kit

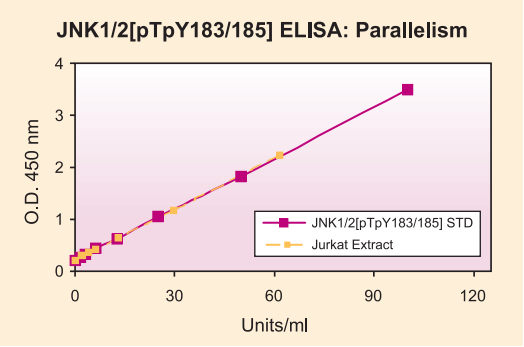
Detects the dual phosphorylated forms of ERK1 at Thr^{202} and Tyr^{204} and ERK2 at Thr^{185} and Tyr^{187}. This activation occurs as a result of treatment with a large variety of stimuli including mitogens, cytokines, and growth factors. Sensitivity: ≤0.8 units/ml; Assay Range: 1.6-100 units/ml. Kit includes coated microtiter plate, ERK1/2 Phospho-Thr^{185}/Tyr^{187} standard, diluents, detector antibody, secondary antibody, wash buffer, TMB substrate, stop solution, plate covers, and a directional insert.

Cat. No. CBA006 **1 Kit** **$ 575**

JNK1/2, Phospho-Specific (Thr^{183}/Tyr^{185}) ELISA Kit

Detects the dually phosphorylated forms of JNK1 and JNK2 at Thr^{183} and Tyr^{185} in human samples. Sensitivity: ≤0.8 units/ml; Assay Range: 1.6-100 units/ml. Kit includes Coated microtiter plate, JNK1/2 Phospho-Thr^{183}/Tyr^{185} standard, diluents, detector antibody, secondary antibody, wash buffer, TMB substrate, stop solution, plate covers, and a directional insert.

Cat. No. CBA007 **1 Kit** **$ 575**



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p38 MAP Kinase, Phospho-Specific (Thr^{180}/Tyr^{182}) ELISA Kit

Detects the dually phosphorylated form of p38 MAP kianse at Thr^{180} and Tyr^{182}. Sensitivity: ≤ 0.8 units/ml; Assay Range: 1.6-100 units/ml. Kit includes coated microtiter plate, ERK1/2 Phospho-Thr^{180}/Tyr^{182} standard, diluents, detector antibody, secondary antibody, wash buffer, TMB substrate, stop solution, plate covers, and a directional insert.

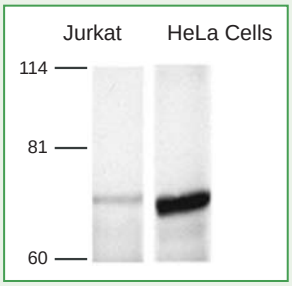
Cat. No. CBA008 **1 Kit** **$ 575**

NEW! Antibodies for Apoptosis Research

Anti-PAK4, Human (Rabbit)

Detects the ~68 kDa PAK4, a serine/threonine kinase involved in cytoskeletal regulation, apoptosis, and transformation. Immunoprecipitation prior to immunoblot is recommended. Suitable for immunoblotting and immunoprecipitation.

Cat. No. AP1019 **50 µg** **$ 129**



Proteins immunoprecipitated from Jurkat (25 x 10^6) and HeLa (5 x 10^6) cell lines using Anti-PAK4. The immunoprecipitated proteins were then subjected to Western blot analysis using Anti-PAK4 as the probe. Note: Antibody heavy and light chains are not shown.

Anti-PARG, Human (Rabbit)

Immunogen used was a synthetic peptide corresponding to amino acid residues 779 - 800 of PARG. This sequence is conserved in bovine, mouse, and rat. Detects the ~59 kDa form of PARG, the major protein involved in poly(ADP-Ribose) (PAR) catabolism. May also detect higher molecular weight forms of PARG (~102-110 kDa) as well as additional nonspecific bands. Suitable for ELISA and immunoblotting.

Cat. No. AP1018 **50 µl** **$ 315**

Anti-BAG-3, Human (Rabbit)

Immunogen used was a synthetic peptide corresponding to the C-terminus of BAG-3. Detects ~84 kDa BAG-3 protein, which is over-expressed in pancreatic cancer and controls the apoptosis of B-chronic lymphocyte leukemia cells. Suitable for immunoblotting, immunocytochemistry, and immunoprecipitation.

Cat. No. AP1020 **50 µl** **$ 139**

Ref.: Pagliuca, M.G., et al. 2003. *FEBS Lett.* **541,** 11

Anti-WWOX (89-107), Mouse (Rabbit)

Immunogen used was a synthetic peptide corresponding to amino acid residues 89-107 of mouse WWOX1. Detects WWOX1 and its expressed isoforms (WWOX v1 to v8). Suitable for immunoblotting and immunocytochemistry.

Cat. No. AP1007 **100 µl** **$ 235**

Anti-WWOX (28-42), Mouse (Rabbit)

Immunogen used was a synthetic peptide corresponding to amino acid residues 28-42 of mouse WWOX. Detects WWOX1 and its expressed isoforms (WWOX v1 to v8). Reacts with human, mouse, and rat. Suitable for immunoblotting, immunocytochemistry, and immunoprecipitation.

Cat. No. AP1008 **100 µl** **$ 235**

Anti-WWOX, Phospho-Specific (Tyr^{33}), Mouse (Rabbit)

Detects WWOX1 and possibly its other expressed isoforms (WWOX v1 to v8) in human, mouse, and rat when phosphorylated on Tyr^{33}. Suitable for immunoblotting.

Cat. No. AP1009 **100 µl** **$ 235**

Ref.: Chang, N.S., et al. 2003. *J. Biol. Chem.* **278,** 9195

Introducing highly selective PARP-1 Inhibitors

EB47

A cell-permeable adenosine-substituted isoindolinone compound that acts as a potent inhibitor of PARP-1 (IC_{50} = 45 nM) and offers cytoprotective effects against oxidative damage. *Purity: ≥95% by HPLC.* M.W. 553.6.

Cat. No. 324473 **1 mg** **$ 70**

Ref.: Jagtap, P.G., et al. 2004. *Bioorg. Med. Chem. Lett.* **14,** 81.

TIQ-A

A cell-permeable, potent inhibitor of poly (ADP-ribose) polymerase-1 (IC_{50} = 450 nM for bovine recombinant PARP-1) that exhibits neuroprotective effects against ischemia both *in vitro* (IC_{50} = 150 nM in cultured murine cortical cells) and *in vivo* (3 mg/kg i.p. in a rat transient focal ischemia model). Reported to be about 20-fold more potent than DPQ (Cat. No. 300270). *Purity: ≥98% by HPLC.*

Cat. No. 612100 **1 mg** **$ 75**

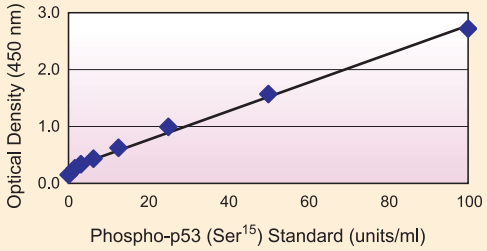
Ref.: Pellicciari, R., et al. 2003. *Farmaco* **58,** 851; Chiarugi, A., et al. 2003. *J. Pharmacol. Exp. Ther.* **305,** 943.

Now Available...

p53, Phospho-Specific (Ser^{15}) ELISA Kit

Detects p53 when phosphorylated on Ser^{15} in human cell lysates. Does not react with mouse or rat. p53 is phosphorylated on Ser^{15} by ATM, ATR, and DNA protein kinase leading to reduced interactions with its negative regulator, MDM2, and accumulation of p53. Kit contains coated microtiter plate, p53 Phospho-Ser^{15} standard, diluents, detector antibody, secondary antibody, wash buffer, TMB substrate, stop solution, plate covers, and a directional insert.

Cat. No. CBA009 **1 Kit** **$ 575**

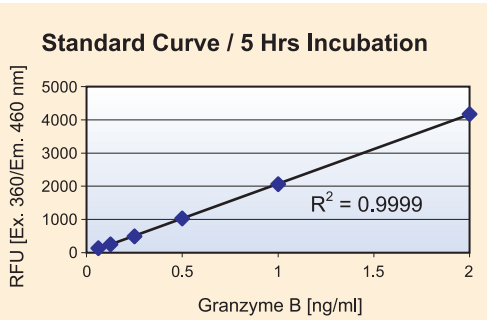


The data shown was obtained for various standards over the range of 0 to 100 units/ml.

Innozyme™ Granzyme B Immunocapture Activity Assay Kit

A sensitive and specific fluorogenic assay kit for Granzyme B based on the QuickZyme™ technology platform where modified pro-urokinase serves as a substrate for granzyme B. Suitable for use with cell lysates, tissue extracts, and body fluids. Kit contains coated microtiter plate, modified prourokinase (UKGran), substrate, granzyme B standard, assay buffer, wash buffer, plate sealers, and a directional insert.

Cat. No. CBA014 **1 Kit** **$ 525**



NEW! Inhibitors of Apoptosis

Caspase Inhibitor IX (Z-Val-Asp-FMK)

A cell-permeable, potent, broad range, and irreversible inhibitor of caspases ($IC_{50} \leq 30$ nM for caspases-1, 3, 6, 7, 8, and 9). Effectively blocks apoptosis in Jurkat T-lymphocytes at low concentrations (~ 0.5 µM). Exhibits greater aqueous solubility and potency than tripeptidyl and tetrapeptidyl-based caspase inhibitors. M.W. 369.4.

Cat. No. 218722 **1 mg** **$ 150**

Ref.: Yang. W., et al. 2003. *Br. J. Pharmacol.* **140,** 402.

Bax Channel Blocker [(±)-1-(3,6-Dibromocarbazol-9-yl)-3-piperazin-1-yl-propan-2-ol, bis TFA]

A cell-permeable dibromocarbazolo-piperazinyl derivative that displays anti-apoptotic properties. Effectively blocks Bid-induced cyctochrome c release from HeLa cell mitochondria (~80% inhibition at 5 µM) by inhibiting Bax channel-forming activity (IC_{50} = 520 nM in a liposome channel assay). *Purity: ≥98% by HPLC.*

Cat. No. 196805 **5 mg** **$ 80**

Ref.: Bombrun, A., et al. 2003. *J. Med. Chem.* **46,** 4365.

Aquaporins: A Pathway for Water Permeation

Aquaporins, the membrane water channels, play critical roles in fluid balance and osmotic regulation in cells. These channels are impermeable to charged particles, hence are critical in maintaining the membrane electrochemical potential. Thus far 10 different mammalian aquaporins have been identified. Aquaporins exist as homotetramers in the plasma membrane with each monomer containing two hemi-pores that fold together to form the channel. Each subunit of the tetramer contains an individual aqueous pore that permits single-file passage of water molecules but interrupts the hydrogen bonding needed for passage of protons. Lesions in aquaporin genes or acquired dysfunction in aquaporins have been linked to congestive heart failure, inflammation, renal disease, cataracts, and tumorigenesis.

Ref.: Bedford J.J., et al. 2003. *J. Am. Soc. Nephrol.* **14,** 2581; Moon, C., et al. 2003. *Oncogene* **22,** 6699; Agre, P., et al. 2002. *J. Physiol.* **542**, 3; Towne, J.E., et al. 2000. *Am. J. Respir. Cell. Mol. Biol.* **22,** 34; Borgnia, M., et al. 1999. *Annu. Rev. Biochem.* **68,** 425.

Antibodies for Aquaporin Channels

Product	Cat. No.	Comments	Size	US $
Anti-Aquaporin 0, Human (Rabbit)	178610	Recognizes the 26 kDa AQP0 protein in bovine, human, mouse, and rat. **ELISA, IB, IF, IH**	50 µg	231
Anti-Aquaporin 1 (243-261), Human (Rabbit)	178611	Epitope is identical in human, rodent, and cattle protein, and only slightly different in frog. Provided with a control antigen peptide. **IB, IH**	1 Set	148
Anti-Aquaporin 2 (254-271), Mouse/Rat (Rabbit)	178612	Epitope is identical in rat and mouse protein, and only slightly different in human (17/18 residue identity). Provided with a control antigen peptide. **IB, IH, IP**	1 Set	148
Anti-Aquaporin 3 (275-292), Rat (Rabbit)	178613	Epitope is highly homologous in mouse (17/18) and human (15/18). Provided with a control peptide. **IB, IH**	1 Set	148
Anti-Aquaporin 4, Rat (Rabbit)	178614	Recognizes both the ~52 kDa (glycosylated) and 31 kDa (nonglycosylated) forms of AQP4 in human, mouse, and rat. **ELISA, IB**	50 µg	222
Anti-Aquaporin 5, Rat (Rabbit)	178615	Recognizes the ~28 kDa AQP5 protein in human, mouse, and rat. **ELISA, IB, IF, IH**	50 µg	222
Anti-Aquaporin 6, Human (Rabbit)	178616	Recognizes the ~29 kDa AQP6 protein in cell lysates in human. **ELISA, IB, IF, IH**	50 µg	222
Anti-Aquaporin 7, Rat (Rabbit)	178617	Recognizes the ~27 kDa AQP7 protein in cell lysates in mouse and rat. **ELISA, IB, IF, PS**	50 µg	222
Anti-Aquaporin 8, Rat (Rabbit)	178618	Recognizes the ~28 kDa AQP8 protein in cell lysates in mouse and rat. **ELISA, IB, IF, IH**	50 µg	222
Anti-Aquaporin 9, Rat (Rabbit)	178619	Recognizes the ~30 kDa AQP9 protein in cell lysates. **ELISA, IB, IF, IH**	50 µg	222

***Key: ELISA:** Enzyme-Linked Immunosorbent Assay; **IB:** Immunoblotting; **IC:** Immunocytochemistry; **IF:** Immunofluorescence; **IH:** Immunohistochemistry; **IP:** Immunoprecipitation; **PS:** Paraffin Sections

Introducing **NEW!** Photo-stable Probes for Reactive Oxygen Species

ROS Probe, APF (Aminophenyl Fluorescein)

A cell-permeable compound that acts as a highly sensitive fluorescent probe for the detection of hypochlorite (OCl^-), hydroxyl radical ($OH^\bullet$), and peroxynitrite ($ONOO^-$). It has little activity towards other reactive oxygen species (ROS), such as singlet oxygen (O_2^1), superoxide ($O_2^{\bullet-}$), hydrogen peroxide (H_2O_2), nitric oxide ($NO^\bullet$), and alkyl peroxide ($RO_2^\bullet$). The probe itself exhibits little basal fluorescence and emits strongly enhanced fluorescence only after converting to fluorescein ($\Phi_{fl} \sim 0.85$) upon reaction with selected ROS.
Purity: ≥98% by HPLC.

Cat. No. 557355 1 mg $ 420

Ref.: Setsukinai, K., et al. 2003. *J. Biol. Chem.* **278,** 3170.

ROS Probe, HPF (Hydroxyphenyl Fluorescein)

A cell-permeable compound that acts as a highly sensitive fluorescent probe for the detection of hydroxyl radical ($OH^{\bullet}$) and peroxynitrite ($ONOO^-$). It has little activity towards other reactive oxygen species (ROS), such as hypochlorite (OCl^-), singlet oxygen ($O_2{}^1$), superoxide ($O2^{-\bullet}$), hydrogen peroxide (H_2O_2), nitric oxide ($NO^{\bullet}$), and alkyl peroxide ($RO_2{}^{\bullet}$). The probe itself exhibits little basal fluorescence and emits strongly enhanced fluorescence only after converting to fluorescein ($\Phi_{fl} \sim 0.85$) upon reaction with selected ROS. *Purity: ≥98% by HPLC.*

Cat. No. 557356 **1 mg** **$ 420**

Ref.: Setsukinai, K., et al. 2003. *J. Biol. Chem.* **278,** 3170.

NEW! Tools for Neurodegenerative Disease Research

NEW! Anti-Tau, Phospho-Specific (Ser^{400}), Human (Rabbit)

Immunogen used was a synthetic phosphopeptide corresponding to amino acid residues surrounding the Ser^{400} phosphorylation site of Tau. Detects Tau protein phosphorylated on Ser^{400} that can be phosphorylated by GSK-3β. Suitable for use in immunoblotting.

Cat. No. NE1006 **10 T** **$ 315**

NEW! Anti-Tau, Phospho-Specific (Ser^{404}), Human (Rabbit)

Immunogen used was a synthetic phosphopeptide coresponding to amino acid residues surrounding the Ser^{404} phosphorylation site of Tau. Detects Tau protein phosphorylated on Ser^{404} that can be phosphorylated by GSK-3β, and Cdk5. Suitable for use in immunoblotting.

Cat. No. NE1007 **10 T** **$ 315**

NEW! Polyglutamine Aggregation Inhibitor, PGL-135

[(2-Amino-4,7-dimethyl)benzothiazol-6-ol, HCl]

A cell-permeable benzothiazole compound that binds to polyglutamine (polyQ)-containing β-sheet structures and prevents polyQ-aggregation, a pathological hallmark of Huntington's disease (HD) and related glutamine repeat disorders. Shown to be non-toxic and prevent HDQ51 (FLAG®-tag HD exon 1 protein with 51 glutamines)-aggregation in 293 Tet-Off (293 tetracycline-off) cells ($IC_{50} = \sim 40$ µM). *Purity: ≥95% by HPLC.*

Cat. No. 528886 **10 mg** **$ 113**

Ref.: Heiser, V., et al. 2002. *Proc. Natl. Acad. Sci. USA* **99,** 16400.

NEW! Prion Protein, His•Tag®, Human, Recombinant, *E. coli*

A full-length mature part of human prion protein (23-231) containing a His•Tag® sequence expressed in *E. coli*. Useful as an antigen standard in immunochemical detection of Creutzfeldt-Jakob Disease (CJD). *Purity: ≥95% by SDS-PAGE.*

Cat. No. 530006 **100 µg** **$ 385**

Ref.: Prusiner, S.B. 1998. *Proc. Natl. Acad. Sci. USA* **95,** 13363; Pan, K.M., et al. 1993. *Proc. Natl. Acad. Sci. USA* **90,** 10962; Basler, K., et al. 1986. *Cell* **46,** 417.

Anti-Apolipoprotein E, Human (Mouse)

Immunogen used was a synthetic peptide corresponding to amino acid residues surrounding the polymorphic amino acid position 158 of ApoE. Detects the E2, E3, and E4 isoforms of ApoE.

Cat. No. NE1004 **100 µl** **$ 295**

Note: 1 T = 1 test

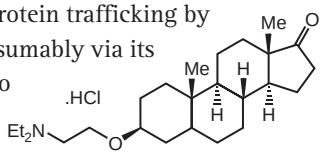
Interested in Cholesterol Trafficking and Sonic Hedgehog Signaling?

Sonic hedgehog (shh) genes are highly conserved and play an important role in morphogenesis during embryonic development. Hedgehog ligands are involved in both short-range (contact-dependent) and long-range signaling events. Shh signaling is not only involved in *de novo* vascularization during embryonic development, but is also known to induce angiogenesis in adults. Oversignaling by Shh appears to be involved in the initiation and propagation of some tumors of the muscle, skin, and nervous system, and Shh is shown to up-regulate VEGF-1 and 2 and angiopoietins-1 and -2.

Ref.: Wetmore, C. 2003. *Curr. Opin. Genet. Dev.* **13,** 34; Pola, R. et al. 2001. *Nat. Med.* **7,** 706; Chuong, CM., et al. 2000. *Cell Mol. Life Sci.* **57,** 1692; McMahon, A.P. 2000. *Cell* **100,** 185; Pepinsky, R.B. et al. 1998. *J. Biol. Chem.* **273,** 14037; Porter, J.A., et al. 1996. *Science* **274,** 255.

U18666A [3β-(2-Diethylaminoethoxy)androst-5-en-17-one, HCl]

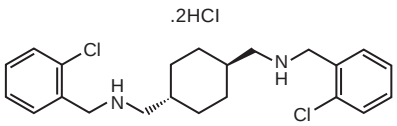
A cell-permeable, amphiphilic amino-steroid that alters intracellular membrane protein trafficking by impairing intracellular biosynthesis and transport of LDL-derived cholesterol, presumably via its inhibitory effect on 2,3-oxidosqualene-lanosterol cyclase activity. Also reported to inhibit the activity of Δ^8-sterol isomerase. *Purity: ≥95% by TLC.* M.W. 424.1



Cat. No. 662015 **10 mg** **$ 85**

AY 9944

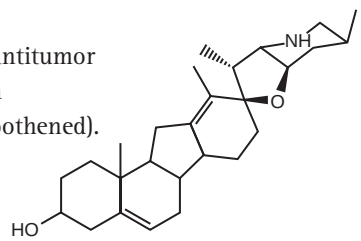
A cell-permeable amphiphilic diamine that blocks cholesterol biosynthesis and its esterification. Specifically blocks 7-dehydrocholesterol reductase (Δ^7-sterol reductase) activity. Important tool in Sonic Hedgehog signaling and teratogenicity studies. Also reported to induce a rapid and irreversible reduction in Acidic-Sphingomyelinase activity in fibroblasts. *Purity: ≥95% by HPLC.* M.W. 464.3.



Cat. No. 190080 **5 mg** **$ 110**

Cyclopamine, *V. californicum*

A steroidal alkaloid and cholesterol mimic that displays both teratogenic and antitumor activities. It disrupts cholesterol bio-synthesis and specifically antagonizes shh (Sonic Hedgehog) signaling pathway through direct interaction with Smo (smoothened). *Purity: ≥98% by TLC.* M.W. 411.6.



Cat. No. 239803 **1 mg** **$ 115**

Tomatidine, HCl

A steroidal alkaloid that structurally resembles Cyclopamine (Cat. No. 239803), but lacks the capacity to inhibit shh (Sonic Hedgehog) signaling. Reported to be non-teratogenic. *Purity: ≥90% by TLC.* M.W. 452.1.

Cat. No. 614350 **25 mg** **$ 45**

SANT-1

Acts as a potent antagonist of the Sonic Hedgehog (shh) signaling pathway (IC_{50} = 20 nM in the Shh-LIGHT2 assay and in Ptch1$^{-/-}$ cells) by binding directly to Smoothened (Smo; K_d = 1.2 nM), a distant relative of G protein-coupled receptors. Unlike cyclopamine, SANT-1 equipotently inhibits the activities of both wild type and oncogenic Smo (IC_{50} = 30 nM in SmoA1-LIGHT2 assay). *Purity: ≥ 95% by HPLC.*

Cat. No. 559303 **5 mg** **$ 104**

Ref.: Chen, J.K., et al. 2002. *Proc. Natl. Acad. Sci. USA* **99,** 14071; Frank-Kamenetsky, M., et al. 2002. *J. Biol.* **1,** 10.

NEW! Cathepsins

Cathepsin E, His•Tag®, Mouse, Recombinant, NSO Cells

A recombinant mouse cathepsin E with a C-terminal His•Tag® sequence expressed in the mouse myeloma cell line, NSO. Must be activated before use. Specific activity: ≥8 units/mg. *Purity: ≥95 by SDS-PAGE.*

Cat. No. 219463 10 µg $ 295

Ref.: Gruninger-Leitch, F., et al. 2000. *Nat. Biotechnol.* **18,** 66; Tatnell, P.J., et al. 1997. *FEBS Lett.* **408,** 62.

Cathepsin K, His•Tag®, Human, Recombinant, *E. coli*

A member of the papain superfamily of cysteine proteinases that plays an important role in osteoclast-mediated bone resorption and collagen degradation. Irregularities in cathepsin K activity are reported to contribute to osteopenic disorders such as osteoporosis and pycnodysostosis. Specific activity: ≥900 mU/mg protein. *Purity: ≥95% by SDS-PAGE.*

Cat. No. 219461 25 µg $ 135

Ref.: Delaisse, J.M., et al. 2003. *Microsc. Res. Tech.* **61,** 504; Dodds, R.A. 2003. *Cell Biochem. Funct.* **21,** 231; Hou, W.S., et al. 2003. *Biol. Chem.* **384,** 891.

Cathepsin S, Human, Recombinant, *E. coli*

A major lysosomal cysteine proteinase preferentially expressed in macrophages and microglia. This recombinant enzyme exhibits high specific activity and does not contain any tag sequences. Specific activity: ≥30,000 mU/mg protein. *Purity: ≥90% by SDS-PAGE.*

Cat. No. 219343 25 µg $ 200

Ref.: Liuzzo, J.P., et al. 1999. *Mol. Med.* **5,** 334; Riese, R.J., et al. 1998. *J. Clin. Invest.* **101,** 2351; Sukhova, G.K., et al. 1998. *J. Clin. Invest.* **102,** 576.

Looking for New Antibodies to Cathepsins?

Product	Cat. No.	Comments*	Size	US $
Anti-Cathepsin F, Human (Rabbit)	219359	Detects the ~32 kDa cathepsin F which has been reported to play a role in invariant chain processing and major histocompatibility complex class II peptide loading by macrophages. Reacts with human and mouse. **IB**	100 µl	239
Anti-Cathepsin Z, Human (Rabbit)	219378	Detects the ~35 kDa cathepsin Z which is widely expressed in human tissues and cancer cells. **IB**	100 µl	239
Anti-Cathepsin R, Mouse (Rabbit)	IM1002	Detects both the pro and mature forms of cathepsin R at ~50 and 32 kDa. **IB, IP, PS**	100 µl	226
Anti-Cathepsin S, Human (Mouse)	IM1003	Detects the pro- and mature forms of cathepsin S at ~28 and 36 kDa respectively. **DB, ELISA, IB**	100 µg	235

***Key: ELISA:** Enzyme-Linked Immunosorbent Assay; **DB:** Dot Blot; **IB:** Immunoblotting; **IP:** Immunoprecipitation; **PS:** Paraffin Sections

"I think that Treadwell is beginning to show some early symptoms of burn out."

NEW! Zinc Probes

ZnAF-2

A membrane-impermeable compound that acts as a high-affinity Zn^{2+}-specific fluorescent probe (K_d = 2.7 nM). Exhibits little affinity towards Ca^{2+}, Mg^{2+}, Na^+, or K^+. *Purity: ≥98% by HPLC.*

Cat. No. 692020 **1 mg** **$ 375**

ZnAF-2 DA

A cell-permeable, diacetylated form of ZnAF-2 (Cat. No. 692020) that is readily hydrolyzed by cytosolic esterases to form the Zn^{2+}-specific fluorescent probe ZnAF-2 and retained in cells. *Purity: ≥98% by HPLC.*

Cat. No. 692021 **1 mg** **$ 375**

Ref.: Ueno, S., et al. 2002. *J. Cell Biol.* **158,** 215; Hirano, T., et al. 2002. *J. Am. Chem. Soc.* **124,** 6555; Hirano, T., et al. 2000. *J. Am. Chem. Soc.* **122,** 12399

Add Convenience to Your Research...

Use our ready-to-use protease inhibitor cocktails

Protease Inhibitor Cocktail Set VI (For Plant Cell Extracts)

A cocktail of six protease inhibitors with broad specificity for the inhibition of aspartic, cysteine, serine, and metalloproteases as well as aminopeptidases. *Each vial contains 200 mM AEBSF, HCl (Cat. No. 101500), 10 µM Bestatin (Cat. No. 200484), 3 mM E-64 (Cat. No. 324890), 2 mM Leupeptin Hemisulfate (Cat. No. 108975), 2 mM Pepstatin A (Cat. No. 516482), and 500 mM 1,10-Phenanthroline (Cat. No. 516705). Supplied with an informational insert.*

Cat. No. 539133 **1 Set (5 x 1 ml)** **$ 254** **1 ml** **$ 59**

Protease Inhibitor Cocktail Set VII (For His•Tag® Proteins)

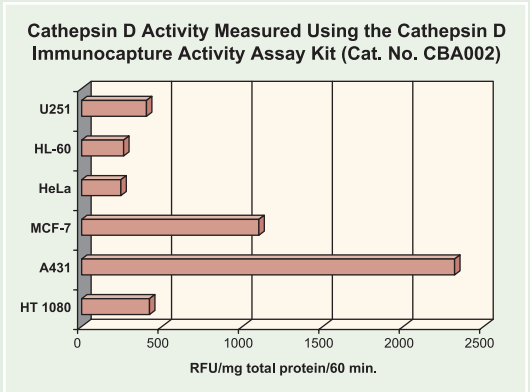
A cocktail of five protease inhibitors with broad specificity for the inhibition of cysteine, serine, aspartic, and thermolysin-like proteases and aminopeptidases. This cocktail is recommended for purification of proteins containing His•Tag® sequences. *Each vial contains 100 mM AEBSF, HCl (Cat. No. 101500), 5 mM Bestatin (Cat. No. 200484), 1.5 mM E-64 (Cat. No. 324890), 2 mM Pepstatin A (Cat. No. 516482), and 200 mM of Phosphoramidon, Disodium Salt (Cat. No. 525276). Supplied with an informational insert.*

Cat. No. 539138 **1 Set (5 x 1 ml)** **$ 254** **1 ml** **$ 59**

InnoZyme™ Cathepsin D Immunocapture Activity Assay Kit, Fluorogenic

A highly selective fluorometric assay kit for quantitative detection of human cathepsin D activity. This assay uses a monoclonal antibody to capture cathepsin D. Activity is detected with an internally quenched fluorescent substrate. Kit contains: coated microtiter plate, substrate, cathepsin D standard, assay buffer, sample buffer, plate wash buffer, plate sealer, and a directional insert. Sensitivity: 0.2 ng/ml.

Cat. No. CBA002 **1 Kit** **$ 440**

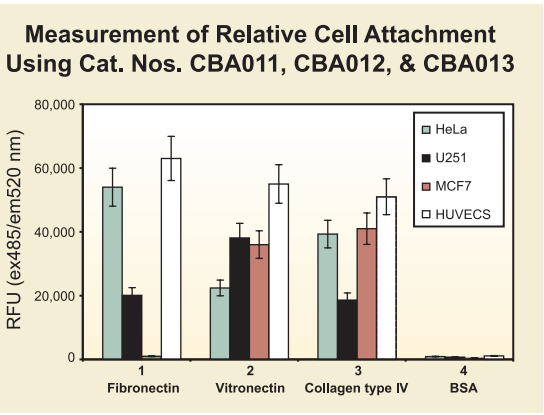


NEW! Tools for Angiogenesis and Tumor Metastasis Research

InnoCyte™ ECM Cell Adhesion Assay, Fibronectin

A convenient assay for the determination of the relative attachment of adherent cell lines to fibronectin. Cells are seeded onto the fibronectin plates followed by determination of relative cell attachment using a fluorescent dye (Excitation max.: ~485 nm; emission max.: ~520 nm). Kit includes coated microtiter plate, fluorescent dye, D-PBS, and a directional insert. Suitable for use with adherent cultured cells.

Cat. No. CBA011 **1 Kit** **$ 149**



InnoCyte™ ECM Cell Adhesion Assay, Vitronectin

A convenient assay for the determination of the relative attachment of adherent cell lines to vitronectin. Cells are seeded onto the vitronectin plates followed by determination of relative cell attachment using a fluorescent dye (Excitation max.: ~485 nm; emission max.: ~520 nm). Kit includes coated microtiter plate, fluorescent dye, D-PBS, and a directional insert. Suitable for use with adherent cultured cells.

Cat. No. CBA012 **1 Kit** **$ 232**

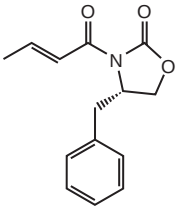
InnoCyte™ ECM Cell Adhesion Assay, Collagen Type IV

A convenient assay for the determination of the relative attachment of adherent cell lines to collagen type IV. Cells are seeded onto the collagen type IV coated plates followed by determination of relative cell attachment using a fluorescent dye (Excitation max.: ~485 nm; emission max.: ~520 nm). Kit includes coated microtiter plate, fluorescent dye, D-PBS, and a directional insert. Suitable for use with adherent cultured cells.

Cat. No. CBA013 **1 Kit** **$ 180**

Introducing...

Cell Sheet Migration Inhibitor [(4S)-3-[(E)-But-2-enoyl]-4-benzyl-2-oxazolidinone]



A cell-permeable, potent, reversible inhibitor of eukaryotic cell migration and growth (IC_{50} = 14 µM for inhibition of wound closure in MDCK cell monolayers). Shown to decrease formation of lamellipodial protrusions at the wound margin. Also inhibits early development in frog embryos and tissue dynamics in embryonic explants. May serve as a useful tool for studying motility-related signaling pathways. *Purity: ≥98% by TLC.*

Cat. No. 219469 **10 mg** **$ 115**

Ref.: Mc Henry, K.T., et al. 2002. *Chembiochem* **3,** 1105.

Cell Sheet Migration Inhibitor, Negative Control

A cell-permeable negative control for the Cell Sheet Migration Inhibitor (Cat. No. 219469). Displays little bioactivity during wound closure and cell proliferation studies (IC_{50} ≥500 mM for wound closure in MDCK cell monolayers). *Purity: ≥98% by TLC.*

Cat. No. 219470 **5 mg** **$ 70**

Ref.: Mc Henry, K.T., et al. 2002. *Chembiochem* **3,** 1105.

Anti-VCIP, C-Terminal, Human (Rabbit) (Anti-PAP2b, C-Terminal)

Immunogen used was a synthetic peptide corresponding to amino acid residues 296 - 310 in the C-terminus intracellular domain of VCIP. Detects VCIP protein at ~38 kDa or 44/48 kDa (glycosylated form). Expression of recombinant VCIP has been reported to promote adhesion, spreading, and tyrosine phosphorylation of Fak, Shc, Cas and paxillin in endothelial cells. Suitable for use in ELISA, IB, IF, IP, PS.

Cat. No. IM1007 **50 µg** **$ 201**

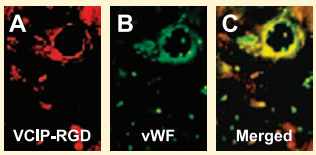
Ref.: Humtsoe, J.O., et al. 2003. *EMBO J.* **22,** 1539.

Anti-VCIP, RGD Domain, Human (Rabbit)

Immunogen used was a synthetic peptide corresponding to amino acid residues 173 - 192 in the second putative extracellular loop of VCIP. Detects VCIP protein at ~38 kDa or 44/48 kDa (glycosylated form).

Cat. No. IM1008 **50 µg** **$ 201**

Ref.: Humtsoe, J.O., et al. 2003. *EMBO J.* **22,** 1539.



*Immunofluorescence image: Double staining of human hemangioma tumor section with **(A)** rabbit anti-VCIP-RGD (25 µg/ml; red) Polyclonal and **(B)** anti-vWF (20 µg/ml; green) monoclonal antibodies. **(C)** yellow merged image shows colocalization.*

NEW! Inhibitors of Angiogenesis

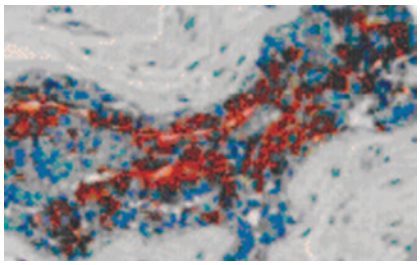
Product	Cat. No.	Comments	Size	US $
Angiogenin Inhibitor	175610	A cell-permeable azo-napthalene sulfonate that binds to the ribonucleolytic active site of angiogenin and inhibits its activity (K_i = 81 µM). *Purity:≥95% by HPLC.*	10 mg	91
Benzopurpurin B	199500	A symmetrical bis-azo compound that blocks the activity of angiogenin (K_i ~ 5 µM for human angiogenin). Also inhibits the Rnase A activity (K_i = 2.5 µM for bovine pancreatic ribonuclease A) *Purity: ≥98% by TLC.*	25 mg	75
TSRI265	654100	A potent inhibitor of angiogenesis that blocks tumor growth *in vivo*. Binds to integrin $\alpha_v\beta_3$ and blocks its interaction with MMP-2. However, TSRI265 has no direct effect on $\alpha_v\beta_3$ binding to vitronectin. Does not affect MMP-2 activation or its catalytic activity. *Purity:≥95% by HPLC.*	1 mg	133

Looking for Antibodies to Tumor Markers?

Anti-CA 19-9, Human (Mouse)

The CA 19-9 antigen has been identified as a determinant of a glycolipid derived from meconium of certain tumors. This antigen may be expressed in adenocarcinomas of the pancreas, stomach, and colon. Also expressed in approximately half of ovarian tumors. Suitable for immunohistochemistry with paraffin sections.

Cat. No. CA1003 **200 µl** **$ 235**



CA 19-9 staining seen in colorectal adenocarcinoma.

Anti-CA 125, Human (Mouse)

CA 125 is an antigenic determinant which is present on a high molecular weight, mucin-like glycoprotein of molecular weight greater than 200 kDa. Common to most non-mucinous epithelial ovarian carcinomas. Suitable for immunohistochemistry with paraffin sections.

Cat. No. CA1004 **200 µl** **$ 235**

Anti-BRST-1, Human (Mouse)

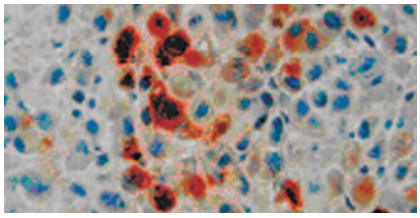
Detects the BCA-225 glycoprotein which is secreted by the T47D human carcinoma cell line. A useful marker for breast and cervical carcinomas. Suitable for immunohistochemistry with paraffin sections.

Cat. No. CA1000 **200 µl** **$ 235**

Anti-BRST-2, Human (Mouse)

Detects the gross cystic disease fluid protein-15 which is a useful marker for the detection of breast carcinoma and the identification of metastasis of breast origin. Suitable for immunohistochemistry with paraffin sections.

Cat. No. CA1001 **200 µl** **$ 235**

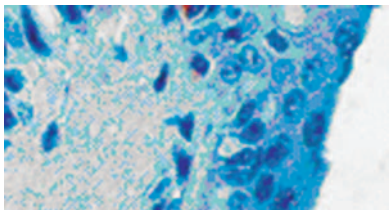


Staining seen in lobular breast carcinoma

Anti-MEL-5, Human (Mouse)

Detects a pigmentation-associated glycoprotein expressed by melanoma cells, normal melanocytes and nevi, but not carcinomas or sarcomas. Suitable for use with frozen sections and immunocytochemistry.

Cat. No. CA1005 **200 µl** **$ 235**



MEL-5 observed on normal skin

NEW! Antibodies to Ras-like Proteins

Anti-ARHI, Human (Mouse)

Detects the ~26 kDa ARHI, a small G-protein with 60% homology to Ras and Rap. ARHI expression is lost or strongly down-regulated in the majority of breast and ovarian carcinomas. Antibody does not cross-react with Ras. Suitable for ELISA, immunoblotting, and immunohistochemistry with paraffin sections.

Cat. No. CA1011 **50 µg** **$ 221**

Ref.: Luo, R.Z., et al. 2003. *Oncogene* **22,** 2897; Yuan, J., et al. 2003. *Cancer Res.* **63,** 4174; Yu, Y.H., et al. 1999. *Proc. Natl. Acad. Sci. USA* **63,** 214.

Anti-ERas, Mouse (Rabbit)

Detects ~25 kDa ERas, a Ras-like protein expressed in ES cells. ERas-null ES cells maintain pluripotency but show significantly reduced tumorigenicity. Does not cross react with K-Ras, N-Ras, and H-Ras. Suitable for immunoblotting and immunofluorescence in human and mouse samples.

Cat. No. CA1013 **50 µl** **$ 129**

Ref.: Takahashi, K, et al. 2003, *Nature* **423,** 541.

Anti-RhoA, Phospho-Specific (Ser^{188}), Human (Rabbit)

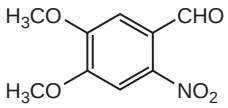
Detects the ~22 kDa RhoA phosphorylated on Ser^{188}. Does not detect the native prenylated form. Phosphorylation of RhoA on Ser^{188} by protein kinases A or G has been reported to inhibit RhoA activity. Suitable for immunoblotting and immunoprecipitation.

Cat. No. ST1035 **50 µg** **$ 149**

Ref.: Ellerbroek, S.M., et al. 2003. *J. Biol. Chem.* **278,** 19023.

Introducing.....**NEW!** Protein Kinase Inhibitors

DNA-PK Inhibitor (4,5-Dimethoxy-2-nitrobenzaldehyde)

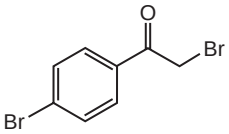


A cell-permeable vanillin derivative that acts as a potent and selective inhibitor of DNA-PK (DNA-dependent protein kinase) activity (IC_{50} = 15 µM) and DNA-PK-mediated DSB (double strand break) DNA repair by NHEJ (non-homologous DNA-end-joining). Shown to effectively sensitize cells to killing by Cisplatin (Cat. No. 232120). Does not affect PKC or Chk2 kinase activities. *Purity: ≥95% by GC.*

Cat. No. 260960 **10 mg** **$ 65**

Ref.: Durant, S., and Karran, P. 2003. *Nucleic Acids Res.* **31,** 5501.

GSK-3β Inhibitor VII (α-4-Dibromoacetophenone)



A phenyl α-bromomethyl ketone compound that acts as a cell-permeable, irreversible, and non-ATP competitive inhibitor of GSK-3β (IC_{50} = 0.5 µM). This reactive alkylating agent is selective towards GSK-3β and does not affect PKA activity even at concentrations as high as 100 µM. *Purity: ≥98% by HPLC.*

Cat. No. 361548 **5 mg** **$ 80**

Ref.: Conde, S., et al. 2003. *J. Med. Chem.* **46,** 4631.

JNK Inhibitor III, Cell-Permeable (HIV-TAT_{47-57}-GABA-c-JUNδ_{33-57})

A cell-permeable 37-mer peptide constructed by fusing human c-JUN δ domain (amino acids 33-57) sequence with that of HIV-TAT protein transduction domain (amino acids 47-57) via a γ-aminobutyric acid (GABA) spacer. Shown to specifically disrupt c-JUN-JNK complex formation and the subsequent phosphorylation and activation of c-JUN by JNK both *in vitro* and in intact cells.
Purity: ≥97% by HPLC.

Cat. No. 420130 **1 mg** **$ 165**

Ref.: Holzberg, D., et al. 2003. *J. Biol. Chem.* **278,** 40213.

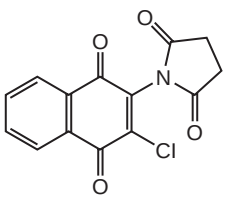
JNK Inhibitor III, Cell-Permeable, Negative Control (HIV-TAT_{47-57}-GABA-c-JUNδ_{33-57}, scrambled)

A cell-permeable 37-mer peptide that contains a scrambled human c-JUN δ domain (amino acids 33-57) sequence linked to that of HIV-TAT protein transduction domain (amino acids 47-57) via a γ-aminobutyric acid (GABA) spacer. Does not disrupt c-JUN-JNK complex formation and serves as a negative control for JNK Inhibitor III, Cell-Permeable (Cat. No. 420130). *Purity: ≥97% by HPLC.*

Cat. No. 420131 **1 mg** **$ 165**

NEW! MEK Inhibitor

MEK Inhibitor II (2-Chloro-3-(N-succinimidyl)-1,4-naphthoquinone)



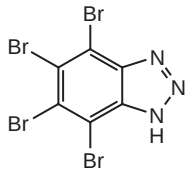
A cell-permeable, potent, and selective inhibitor of MEK (IC_{50} = 380 nM for MEK1) with little effect on PKC and PKA. Inhibits Raf1 and Erk1 only at much higher concentrations (IC_{50} = 34.5 and 82.9 µM, respectively). *Purity: ≥97% by HPLC.*

Cat. No. 444938 **5 mg** **$ 75**

Ref.: Bakare, O., et al. 2003. *Bioorg. Med. Chem.* **11,** 3165.

Casein Kinase II Inhibitor (4,5,6,7-Tetrabromobenzotriazole)

A cell-permeable, highly selective, ATP/GTP-competitive inhibitor of CK2 (IC_{50} = 900 nM and 1.6 µM, using rat liver and human recombinant CK2, respectively). Its specificity has been demonstrated using a panel of 33 kinases. *Purity: ≥97% by HPLC.*

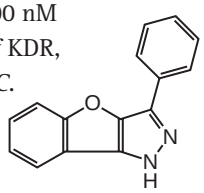


Cat. No. 218697 **10 mg** **$ 70**

Ref.: Borowski, P., et al. 2003. *Eur. J. Biochem.* **270,** 1645; Zien, P., et al. 2003. *Biochem. Biophys. Res. Commun.* **306,** 129; Sarno, S., et al. 2001. *FEBS Lett.* **496,** 44.

GTP-14564 (3-Phenyl-1H-benzofuro[3,2-c]pyrazole)

A cell-permeable, potent, and specific inhibitor of class III receptor tyrosine kinases (IC_{50} = 300 nM for c-fms, c-kit, wt-FLT3, and ITD-FLT3; 1.0 µM for PDGFRb). Does not affect the activities of KDR, EGFR, HER2, Abl, Src, PKA, AKT, PKC, MEK, or ERK1/2 (IC_{50} ≥ 10 µM). *Purity: ≥98% by HPLC.*

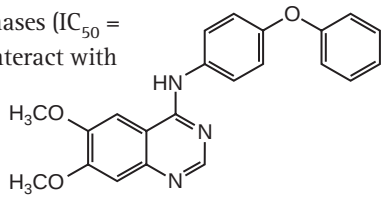


Cat. No. 371806 **5 mg** **$ 80**

Ref.: Murata, K., et al. 2003. *J. Biol. Chem.* **278,** 32892.

Src Kinase Inhibitor I [4-(4′-Phenoxyanilino)-6,7-dimethoxyquinazoline]

A potent, selective, dual site, competitive inhibitor of Src family tyrosine kinases (IC_{50} = 44 nM and 88 nM for Src and Lck, respectively). Shown to simultaneously interact with both the ATP- and peptide-binding sites. Inhibits VEGFR-2 and c-fms tyrosine kinases at much higher concentrations (IC_{50} = 320 nM and 30 µM, respectively). *Purity: ≥98% by HPLC.*

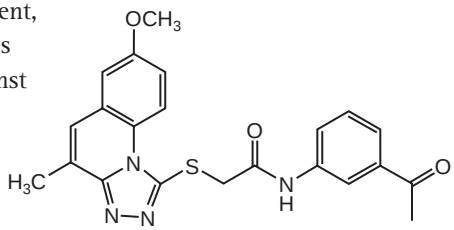


Cat. No. 567805 **1 mg** **$ 98**

Ref.: Tian, G., et al. 2001. *Biochemistry* **40,** 7084.

Src Kinase Inhibitor II

A substituted triazoloquinoline-1-thione compound that acts as a potent, ATP-competitive, and selective inhibitor of Src family tyrosine kinases (IC_{50} = 1.2 µM for human recombinant Csk). Exhibits little effect against p38 MAPK or FGFR even at concentrations as high as 50 µM. *Purity: ≥98% by HPLC.*



Cat. No. 567806 **5 mg** **$ 145**

Ref.: Kilimnik, A., et al. 2003. *Cell. Mol. Biol. Lett.* **8,** 588.

NEW! Antibodies For Protein Kinase Research

Product	Cat. No.	Comments*	Size	US $
Anti-Aurora-A, Human (Rabbit)	PC742	Detects the ~48 kDa Aurora-A, a serine/threonine kinase which has been reported to interact with p53. **IP, PS**	100 µl	283
Anti-Casein Kinase 1δ, Human (Goat)	ST1006	Detects casein kinase 1δ, a serine/threonine kinase which has been reported to play a key role in the hyperphosphorylation of Tau. **PS**	100 µl	232
Anti-Cortactin, Phospho-Specific (Tyr^{421}), Mouse (Rabbit)	CB1000	Detects the 80/85 kDa cortactin phosphorylated on Tyr^{421}. Cortactin has been reported to be a substrate for Src kinase. **IB, IC**	10 T	315
Anti-MEK1, Phospho-Specific (Ser^{298}), Human (Rabbit)	ST1015	Detects the ~43 kDa MEK1 protein phosphorylated on Ser^{298}, phosphorylated by PAK1. Reacts with human, mouse, and rat. **IB**	10 T	315
Anti-PAK1/2/3, Phospho-Specific (Thr^{423}), Human (Rabbit)	ST1018	Detects the ~65 kDa PAK1 phosphorylated on Thr^{423}, PAK2 phosphorylated on Thr^{402}, and PAK3 phosphorylated on Thr^{421} corresponding to the autophosphorylations site of PAK. **IB**	10 T	315

***Key: ELISA:** Enzyme-Linked Immunosorbent Assay; **IB:** Immunoblotting; **IC:** Immunocytochemistry; **IH:** Immunohistochemistry; **IP:** Immunoprecipitation; **PS:** Paraffin Sections; 1 T = 1 Test

Product	Cat. No.	Comments*	Size	US $
Anti-Protein Kinase C_δ, Phospho-Specific (Tyr^{311}), Mouse (Rabbit)	ST1019	Detects the ~77 kDa PKC_δ phosphorylated on Tyr^{311}. It has been proposed that Tyr^{311} is phosphorylated by Src family protein kinases. Reacts with mouse and rat. **IB**	10 T	315
Anti-Pyk2, Phospho-Specific (Tyr^{580}), Human (Rabbit)	ST1021	Detects the ~120 kDa Pyk2 phosphorylated on Tyr^{580} within the catalytic domain of Pyk2. Phosphorylation of this site as well as Tyr^{579} by Src results in the maximal activation of Pyk2. Reacts with human and rat. **IB, IC**	10 T	315
Anti-Pyk2, Phospho-Specific (Tyr^{881}), Human (Rabbit)	ST1022	Detects the ~120 kDa Pyk2 phosphorylated on Tyr^{881} within the potential Grb2-binding site of Pyk2. Reacts with human and rat. **IB**	10 T	315
Anti-Shc, Human (Rabbit)	ST1033	Detects the ~46, 55, and 66 kDa isoforms of Shc. Shc is an SH2-PTB domain adaptor protein that links various tyrosine kinases to Ras by recruiting the Grb2/SOS complex to the plasma membrane. Reacts with human, mouse, and rat. **ELISA, IC, IH, IP**	50 µg	201

***Key: ELISA:** Enzyme-Linked Immunosorbent Assay; **IB:** Immunoblotting; **IC:** Immunocytochemistry; **IH:** Immunohistochemistry; **IP:** Immunoprecipitation; **PS:** Paraffin Sections; 1 T = 1 Test

NEW! Antibodies for DNA Damage and Repair

DNA Damage is considered to be an important event in the initiation and progression of cancer and other pathological events. Reactive oxygen-derived species, radiation, and other genotoxic agents may cause DNA damage. DNA damage has been shown to be involved in a variety of genetically inherited disorders, aging, and carcinogenesis. DNA repair is coordinated with cell cycle progression and apoptosis to maintain genomic integrity and conformity. Failure to repair DNA lesions results in blockages of transcription and replication, mutagenesis, and cellular cytotoxicity.

Product	Cat. No.	Comments*	Size	US $
Anti-BRCA1, Phospho-Specific (Ser^{1524}), Human (Rabbit)	PC732	Detects the ~220 kDa BRCA1 phosphorylated on Ser^{1524}, which occurs in response to ionizing and UV radiation. **IB**	100 µl	325
Anti-Claspin, Human (Rabbit)	DR1006	Detects the ~180 kDa claspin, an acidic protein which regulates Chk1 and monitors DNA replication. **IB, IP**	100 µl	295
Anti-MCM2, Human (Goat)	DR1007	Detects the ~120 kDa MCM2, a component of the prereplicative complex which is essential for eukaryotic DNA replication. Reported to be expressed only in proliferating cells. **IB**	100 µl	295
Anti-MCM3, Human (Goat)	DR1008	Detects the ~110 kDa MCM3, an essential component of DNA pre-replication complexes. When acetylated by MCM3 acetylating protein (MCM3AP), cell cycle replication is inhibited. **IB**	100 µl	295
Anti-MCM4, Human (Goat)	DR1009	Detects the ~97 kDa MCM4, an essential component of DNA pre-replication complexes. Phosphorylation of MCM4 by Cdk2 inhibits DNA replication. **IB**	100 µl	295
Anti-MCM6, Human (Goat)	DR1010	Detects the ~106 kDa MCM6, an essential component of DNA pre-replication complexes. MCM6 expression has been reported to be restricted to proliferating cells. **IB**	100 µl	295
Anti-Rad17, Phospho-Specific (Ser^{645}), Human (Rabbit)	DR1013	Detects the ~86 kDa Rad17 phosphorylated on Ser^{645}. Rad17 is reported to be phosphorylated on Ser^{645} by ATR in response to genotoxic stress. **IB**	100 µl	315

***Key: IB:** Immunoblotting; **IC:** Immunocytochemistry; **IF:** Immunofluorescence; **IH:** Immunohistochemistry; **IP:** Immunoprecipitation

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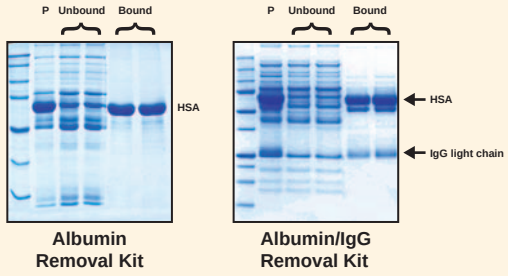

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