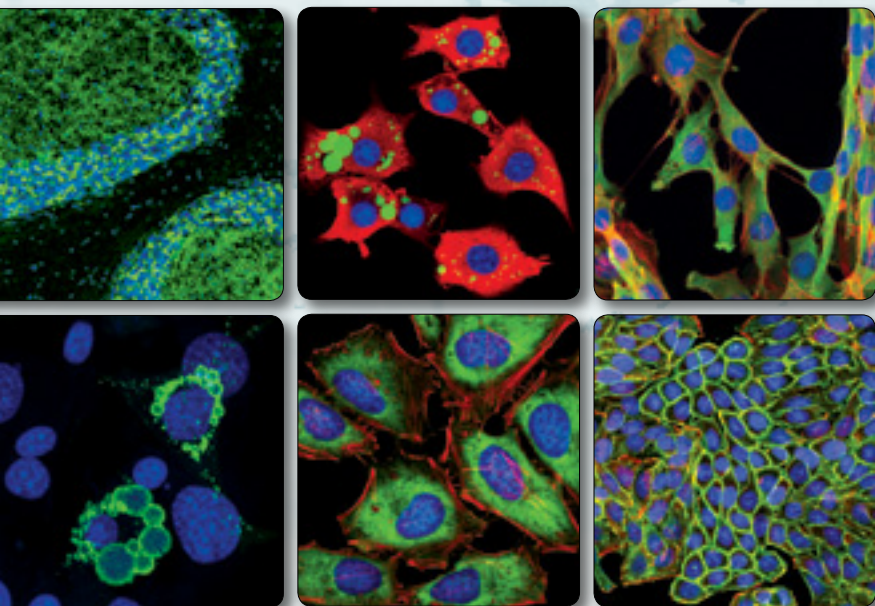


UNPARALLELED PRODUCT QUALITY, VALIDATION, AND TECHNICAL SUPPORT



Antibodies and Kits
for the Study of
**Cellular
Metabolism**



Cell Signaling

TECHNOLOGY®

XP[®] Monoclonal Antibodies for Cellular Metabolism

XP[®] monoclonal antibodies are a line of high quality rabbit monoclonal antibodies exclusively available from Cell Signaling Technology (CST). Any product labeled with XP has been carefully selected based on superior performance in all approved applications.

XP monoclonal antibodies are generated using XMT[®] technology, a proprietary monoclonal method developed at CST. This technology provides access to a broad range of antibody-producing B cells unattainable with traditional monoclonal technologies, allowing more comprehensive screening and the identification of XP monoclonal antibodies with:

eXceptional specificity

As with all CST[™] antibodies, the antibody is specific to your target of interest, saving you valuable time and resources.

+eXceptional sensitivity

The antibody will provide a stronger signal for your target protein in cells and tissues, allowing you to monitor expression of low levels of endogenous proteins, saving you valuable materials.

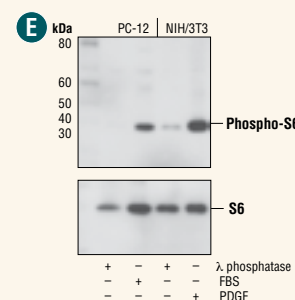
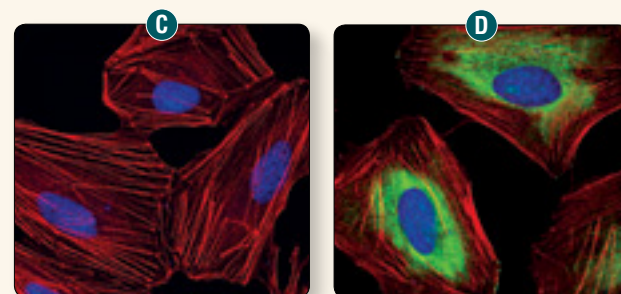
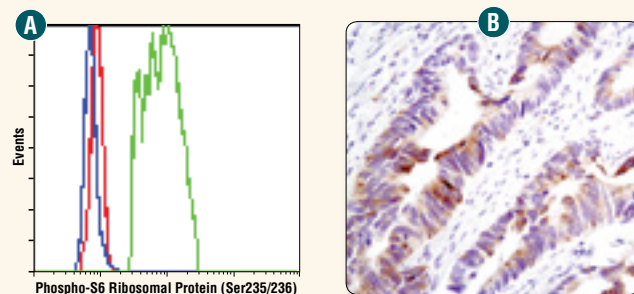
+eXceptional stability and reproducibility

XMT technology combined with our stringent quality control ensures maximum lot-to-lot consistency and the most reproducible results.

=eXceptional Performance[™]

XMT technology coupled with our extensive antibody validation and stringent quality control delivers XP monoclonal antibodies with eXceptional Performance in the widest range of applications.

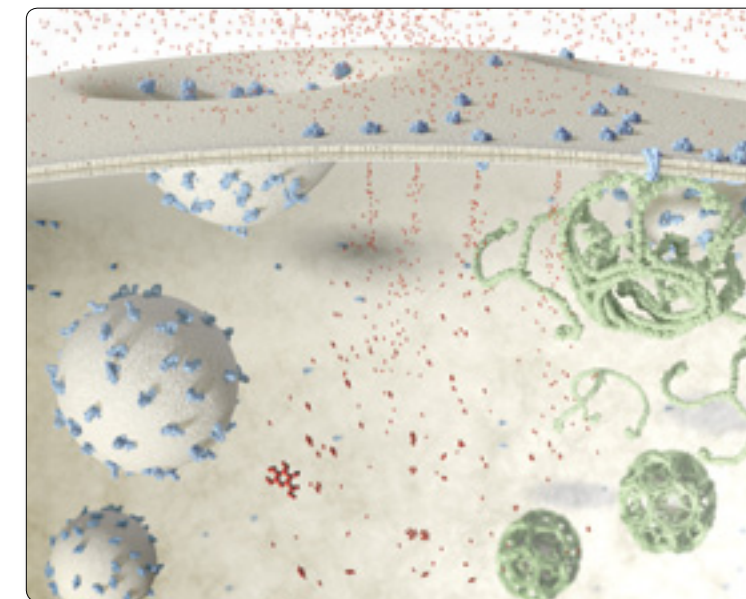
Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP[®] Rabbit mAb #4858 is an example of an antibody with superior performance in a wide range of tested applications.



Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP[®] Rabbit mAb #4858: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, wortmannin #9951, and U0126 #9903 (blue), using #4858 compared to a nonspecific negative control antibody (red) (A). IHC analysis of paraffin-embedded human colon carcinoma (B) using #4858. Confocal IF analysis of HeLa cells, treated with rapamycin #9918 (C) or 20% serum (D), using #4858 (green). Actin filaments were labeled with Alexa Fluor[®] 555 phalloidin (red). Blue pseudocolor = DRAQ5[®] #4084 (fluorescent DNA dye). WB analysis of extracts from PC-12 and NIH/3T3 cells (E), treated with λ phosphatase, 20% FBS (20 min) or PDGF (100 ng/ml, 20 min), as indicated, using #4858 (upper) or S6 Ribosomal Protein (5G10) Rabbit mAb #2217 (lower).

Antibodies and Kits for the Study of Cellular Metabolism

Cell Signaling Technology provides the highest quality activation state and total protein antibodies available for the study of signaling pathways central to metabolic disorders. CST[™] antibodies have been extensively validated by our in-house clinical applications group for applications including immunohistochemistry, immunofluorescence, ELISA, flow cytometry, and drug discovery technologies. Furthermore, technical support is provided by the same scientists who produce and validate our products and know them best. Comprehensive and up-to-date product information can be found on our website.



Glut4 delivery to the membrane: Insulin binding to its receptor stimulates the delivery of Glut4 glucose transporters to the membrane (via signaling through Akt-not shown). A 'pre-fusion vesicle' loaded with Glut4 (light blue) in the lower left fuses and transports Glut4 to the plasma membrane. This leads to glucose uptake into the cell (small red particulate material). Membrane Glut4 is eventually recycled to the cell interior via clathrin-mediated receptor endocytosis. Clathrin triskelions are shown in green, assembling around a budding vesicle (top right).

Table of Contents

- 4 AMPK Signaling
- 6 Insulin Signaling And Glucose Transport
- 8 Akt Signaling
- 11 Antibody Sampler Kits
- 12 mTOR Signaling
- 15 Autophagy
- 16 Glucose Metabolism/Warburg Effect
- 18 Lipid Metabolism
- 20 ER Stress
- 21 PathScan[®] Sandwich ELISA Kits and Antibody Pairs
- 22 Hormone/Nuclear Receptors
- 23 Other Proteins
- 24 Signaling Pathways

Environmental commitment: eco.cellsignal.com

Visit our website for more experimental details, additional information, and a complete list of available XP monoclonal antibodies.

Unparalleled Product Quality, Validation, and Technical Support

AMPK Signaling

Application References:

Phospho-Acetyl-CoA Carboxylase (Ser79) Antibody #3661: Göransson, O. et al. (2007) *J. Biol. Chem.* 282, 32549–32560. (W) / Aymerich, I. et al. (2006) *J. Cell Sci.* 119, 1612–1621. (W) / Gonzalez, A.A. et al. (2004) *Am. J. Physiol. Endocrinol. Metab.* 287, 1032–1037. (W) / Lin, J. et al. (2004) *Cell* 119, 121–135. (W) / Pilon, G. et al. (2004) *J. Biol. Chem.* 279, 20767–20774. (W) / Shaw, R.J. et al. (2004) *Proc. Natl. Acad. Sci. USA* 101, 3329–3335. (W)

Phospho-AMPK α (Thr172) (40H9) Rabbit mAb #2535: Feng, Z. et al. (2005) *Proc. Natl. Acad. Sci. USA* 102, 8204–8209. (W) / Göransson, O. et al. (2007) *J. Biol. Chem.* 282, 32549–32560. (W) / Tzatsos, A. and Kandror, K.V. (2006) *Mol. Cell Biol.* 26, 63–76. (W)

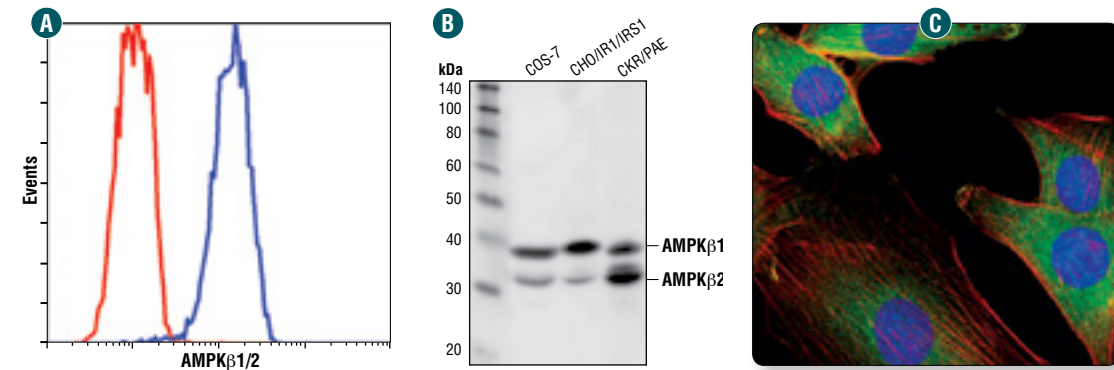
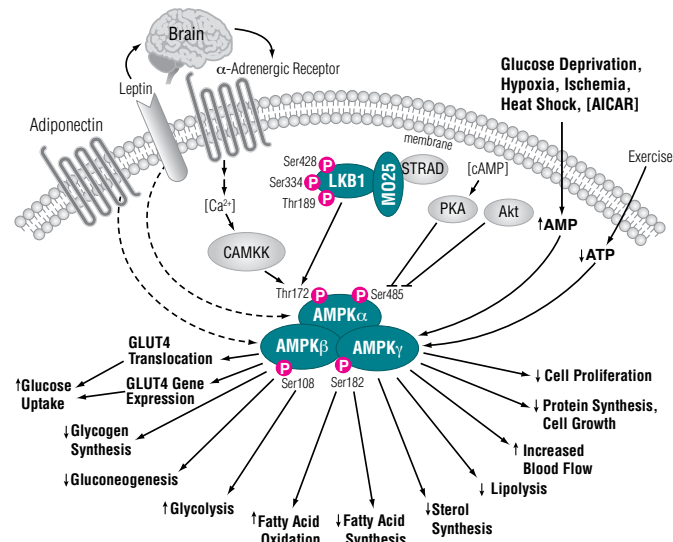
Phospho-AMPK α (Thr172) Antibody #2531: Lin, J. et al. (2004) *Cell* 119, 121–135. (W) / Shaw, R.J. et al. (2004) *Proc. Natl. Acad. Sci. USA* 101, 3329–3335. (W) / Woods, A. et al. (2005) *Cell Metabolism* 2, 21–33. (W)

AMPK α Antibody #2532: Göransson, O. et al. (2007) *J. Biol. Chem.* 282, 32549–32560. (W) / Shaw, R.J. et al. (2004) *Proc. Natl. Acad. Sci. USA* 101, 3329–3335. (W) / Tzatsos, A. and Kandror, K.V. (2006) *Mol. Cell Biol.* 26, 63–76. (W) / Zou, M.H. et al. (2003) *J. Biol. Chem.* 278, 34003–34010. (W, IP)

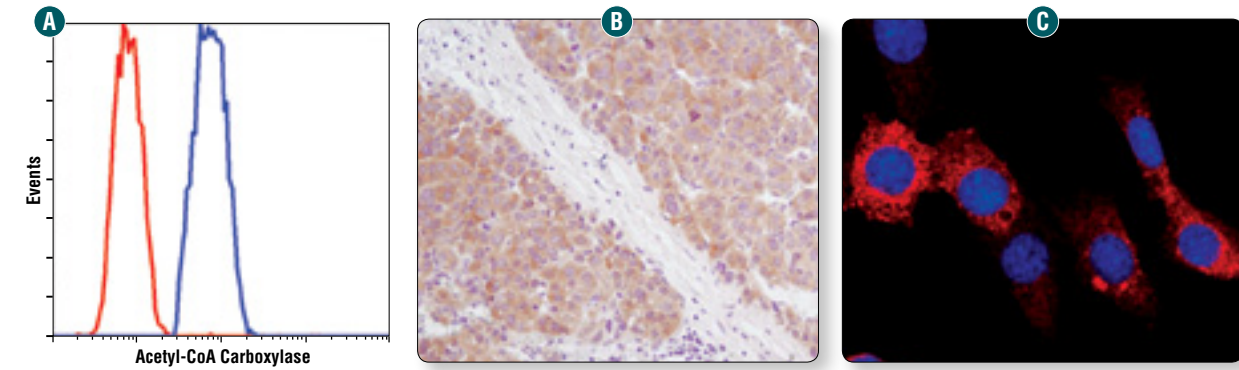
Phospho-AMPK β 1 (Ser108) Antibody #4181: Ayasolla, K.R. et al. (2005) *J. Neuroinflammation* 2, 21. (W)

Phospho-LKB1 (Thr189) Antibody #3054: Xie, Z. et al. (2006) *J. Biol. Chem.* 281, 6366–6375. (W)

Phospho-LKB1 (Ser334) Antibody #3055: Xie, Z. et al. (2006) *J. Biol. Chem.* 281, 6366–6375. (W)

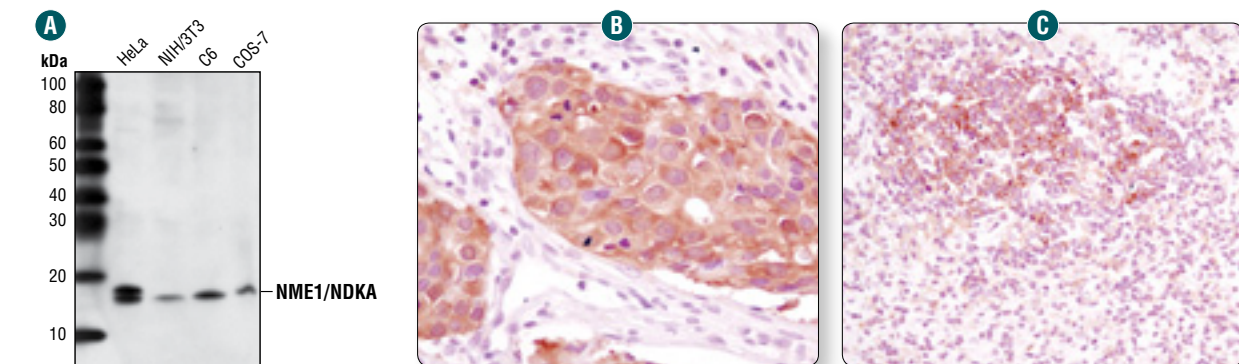


AMPK β 1/2 (57C12) Rabbit mAb #4150: Flow cytometric analysis of COS-7 cells (A) using #4150 (blue) compared to a nonspecific negative control antibody (red). WB analysis of extracts from various cell lines using #4150 (B). Confocal IF analysis of C2C12 cells (C) using #4150 (green). Actin filaments were labeled with Alexa Fluor[®] 555 phalloidin (red). Blue pseudocolor = DRAQ5[®] #4084 (fluorescent DNA dye).



Acetyl-CoA Carboxylase (C83B10) Rabbit mAb #3676: Flow cytometric analysis of 293 cells (A) using #3676 (blue) compared to a nonspecific negative control antibody (red). IHC analysis of paraffin-embedded human hepatocellular carcinoma (B) using #3676. Confocal IF analysis of NIH/3T3 cells (C) using #3676 (red). Blue pseudocolor = DRAQ5[®] #4084 (fluorescent DNA dye).

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NME1/NDKA (D98) Antibody #3345: WB analysis of extracts from various cell lines using #3345 (A). IHC analysis of paraffin-embedded human breast carcinoma (B) and lymphoma (C) using #3345.

AMPK Antibody Comparison

	Reactivity	WB	IP	IHC	Flow	IF
#4188 Phospho-AMPKα (Thr172) (D79.5E) Rabbit mAb	H, M, R, Dm, Sc, (B)	++++	–	N/T	–	–
#2535 Phospho-AMPKα (Thr172) (40H9) Rabbit mAb	H, M, R, Hm, Mk, Dm, Sc, (C, B)	+++	–	++	–	–
NEW #5256 Phospho-AMPKα (Thr172) (40H9) Rabbit mAb (Biotinylated)	H, M, R, Hm, Mk, Dm, Sc, (C, B)	+++	–	N/A	N/T	N/A
#2531 Phospho-AMPKα (Thr172) Antibody	H, M, R, Mk, (C, B)	+++	–	–	–	–
NEW #5831 AMPKα (D5A2) Rabbit mAb	H, M, R, Mk, B	++++	+++	–	–	–
NEW #5832 AMPKα (D63G4) Rabbit mAb	H, M, R, Mk, B	++++	+++	–	–	–
#2603 AMPKα (23A3) Rabbit mAb	H, M, R, Mk	++++	+++	–	++	–
NEW #6707 AMPKα (23A3) Rabbit mAb (Sepharose Bead Conjugate)	H, M, R, Mk	N/A	+++	N/A	N/A	N/A
#2532 AMPKα Antibody	H, M, R, Hm, Mk	++++	+++	–	–	–
#2793 AMPKα (F6) Mouse mAb	H, M, R, Hm, Mk	+++	–	–	N/T	–
#2537 Phospho-AMPKα1 (Ser485) (45F5) Rabbit mAb	H, M, R, Mk	++	–	N/T	–	–
#4184 Phospho-AMPKα1 (Ser485) Antibody	H, M, R, Mk, (C)	++	–	–	N/T	N/T
#4185 Phospho-AMPKα1 (Ser485)/AMPKα2 (Ser491) Antibody	H, M, R, Mk	++	–	–	N/T	N/T
#2795 AMPKα1 Antibody	H, Mk	++	–	–	–	N/T
#2757 AMPKα2 Antibody	H, Mk	++	+++	N/T	N/T	N/T
#4181 Phospho-AMPKβ1 (Ser108) Antibody	H, M, R, Mk	++	++	–	–	N/T
#4186 Phospho-AMPKβ1 (Ser182) Antibody	H, M, R, Mk	++	++	++	–	–
#4150 AMPKβ1/2 (57C12) Rabbit mAb	H, M, R, Hm, Mk	++	–	++	++	++
#4178 AMPKβ1 (71C10) Rabbit mAb	H, M, Hm, Mk, Pg	++	–	–	N/T	–
#4182 AMPKβ1 Antibody	H, M, R, Mk	++	++	N/T	–	–
#4148 AMPKβ2 Antibody	H, M, R, Mk	++	++	N/T	N/T	N/T
#4187 AMPKγ1 Antibody	H, M, Mk	++	–	–	–	–
#2536 AMPKγ2 Antibody	H, M, R, Mk, B	++	–	–	–	–
#2550 AMPKγ3 Antibody	H	++	N/T	–	–	–

Testing Key: ++++ Very Highly Recommended / +++ Highly Recommended / ++ Recommended / – Not Recommended / N/T Not Tested / N/A Not Applicable

Applications Reactivity

#3661 Phospho-Acetyl-CoA Carboxylase (Ser79) Antibody	W, IP, IHC-P	H, M, R, Mk, (C, B)
#3676 Acetyl-CoA Carboxylase (C83B10) Rabbit mAb	W, IHC-P, IF-IC, F	H, M, R, Hm
#3662 Acetyl-CoA Carboxylase Antibody	W, IP, IHC-P, IF-IC, F	H, M, R, Mk, B, (C, Dm)
#4190 Acetyl-CoA Carboxylase 1 Antibody	W, IP, IF-IC	H, M, R
#4458 ARK5 Antibody	W	H, M, R, Mk, (B)
#3054 Phospho-LKB1 (Thr189) Antibody	W	H
#3055 Phospho-LKB1 (Ser334) Antibody	W	H, (M)
#3482 Phospho-LKB1 (Ser428) (C67A3) Rabbit mAb	W	H, M, R, Mk
#3047 LKB1 (D60C5) Rabbit mAb	W	H, M, R, Mk
#3050 LKB1 (27D10) Rabbit mAb	W, IP	H, R, Mk
#2716 MO25α/CAB39 (C49D8) Rabbit mAb	W, IP	H, M, R, Mk

Applications Reactivity

NEW #5353 NME1/NDKA (D14H1) Rabbit mAb	W	H, M, R, Mk, B
NEW #5389 NME1/NDKA (D18F10) Rabbit mAb	W	H, M, R, Mk, B
#3345 NME1/NDKA (D98) Antibody	W, IHC-P	H, M, R, Mk
#3338 NME1/NDKA (G19) Antibody	W	H, M, R, Mk
#4100 SNARK/NUAK2 Antibody	W	M, (H, R)
#3359 Phospho-Torc1/Crtc1 (Ser151) Antibody	W	H, (M, R)
#2587 Torc1 (C71D11) Rabbit mAb	W	M, R, (H)
#2501 Torc1 Antibody	W	M, (H)
#3826 Torc2 Antibody	W	H
#2720 Torc3 (C35G4) Rabbit mAb	W	H, M, R, Mk
#2768 Torc3 Antibody	W	H, M, R
NEW #9158 AMPK Control Cell Extracts		
#9944 AICAR		
#9996 Oligomycin		

PhosphoPlus[®] Antibody Duets

PhosphoPlus[®] Duets from Cell Signaling Technology (CST) provide a means to assess protein activation status. Each Duet contains an activation state and total protein antibody to your target of interest. The CST[™] antibodies in these kits have been selected based upon superior performance in specified applications.

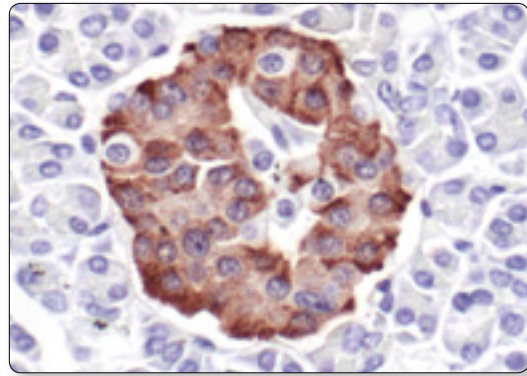
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#8208 PhosphoPlus[®] AMPK α (Thr172) Antibody Duet
Phospho-AMPK α (Thr172) (40H9) Rabbit mAb #2535 • AMPK α Antibody #2532

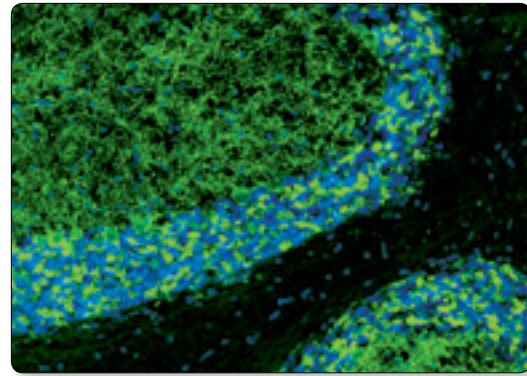
#5132 PhosphoPlus[®] LKB1 (Ser428) Antibody Duet
Phospho-LKB1 (Ser428) (C67A3) Rabbit mAb #3482 • LKB1 (D60C5) Rabbit mAb #3047

Insulin Signaling and Glucose Transport

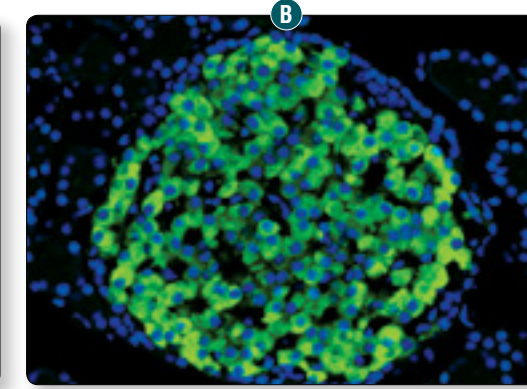
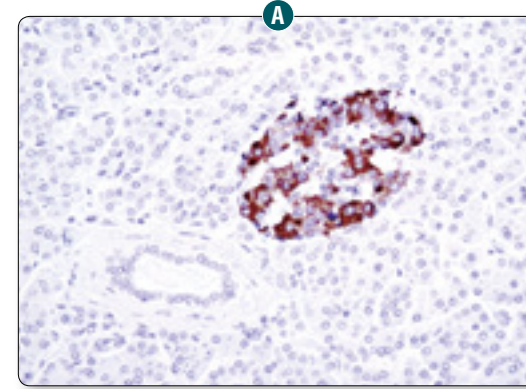
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C-Peptide Antibody #4593: IHC analysis of paraffin-embedded human pancreas, showing staining of β cells, using #4593.



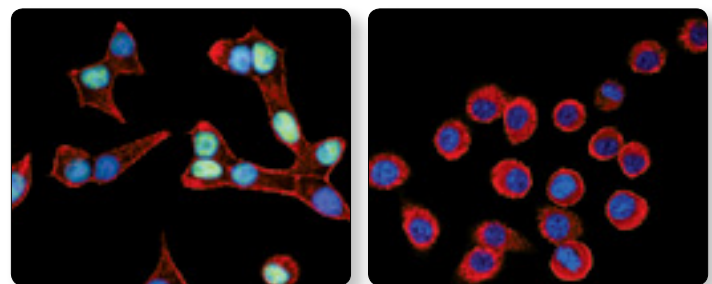
GAD2 (D5G2) XP® Rabbit mAb #5843: Confocal IF analysis of mouse brain using #5843 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



Insulin (C27C9) Rabbit mAb #3014: IHC analysis of paraffin-embedded human pancreas (A), showing the staining of β cells, using #3014. Confocal IF analysis of rat pancreas (B) using #3014 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

	Applications	Reactivity
#2509 AP-2 β Antibody	W, IP, IF-IC	H, M, R
#4288 Phospho-AS160 (Thr642) Antibody	W	H, (M, R)
#2670 AS160 (C69A7) Rabbit mAb	W, IP	H, M, R
#2447 AS160 Antibody	W, IP	H
#4593 C-Peptide Antibody	IHC-P, IHC-F, IF-F, IF-IC	H, M, R
#5342 ENPP1 (D37B7) Rabbit mAb	W	H, (M, R)
#2061 ENPP1 (L520) Antibody	W, IP	H, R, (M)
#2070 ENPP1 Antibody (Human Specific)	W	H
NEW #5258 Fetuin A (F180) Antibody	W, IP	H
#3143 FoxA2/HNF3 β Antibody	W, IP, IF-IC	H, (M, R)
NEW #5843 GAD2 (D5G2) XP® Rabbit mAb	W, IP, IF-F	H, M, R
#3988 GAD2 Antibody	W, IF-F	M, R, (H)
#2760 Glucagon Antibody	IHC-P, IHC-F, IF-F	H, M, R
#2213 Glut4 (1F8) Mouse mAb	W	M, R
#3286 GPX1 (C8C4) Rabbit mAb	W, IP	H
#3206 GPX1 Antibody	W, IP	H
#4568 Phospho-IGF-1 Receptor β (Tyr980) (C14A11) Rabbit mAb	W	H, M, R
#3021 Phospho-IGF-1 Receptor β (Tyr1131)/Insulin Receptor β (Tyr1146) Antibody	W, IP	H, M, R, (B)
#3918 Phospho-IGF-1 Receptor β (Tyr1135) (DA7A8) Rabbit mAb	W	H, M, (R)
#3024 Phospho-IGF-1 Receptor β (Tyr1135/1136)/Insulin Receptor β (Tyr1150/1151) (19H7) Rabbit mAb	W	H, M, R, (B)
#6113 Phospho-IGF-1 Receptor β (Tyr1316) Antibody	W, IP	H, M, R
#3018 IGF-1 Receptor β (111A9) Rabbit mAb	W, IP	H, M, R, Mk
#3027 IGF-1 Receptor β Antibody	W, IP, IHC-P	H, M, R, Mk
#3922 IGF-1 Receptor β Antibody	W, IP, IHC-P	H
#3014 Insulin (C27C9) Rabbit mAb	IHC-P, IF-F, IF-IC, F	H, M, R
#4590 Insulin Antibody	IHC-P, IF-F, IF-IC, F	H, M, R
#3026 Phospho-Insulin Receptor β (Tyr1345) (14A4) Rabbit mAb	W	H
#3023 Phospho-Insulin Receptor β (Tyr1361) (84B2) Rabbit mAb	W	H
#3025 Insulin Receptor β (4B8) Rabbit mAb	W, IP	H, M, R
#3020 Insulin Receptor β (L55B10) Mouse mAb	W, IP	H, M, R
#3808 IRAP Antibody	W, IP, IF-IC	H, M, (R)
#2491 Phospho-IRS-1 (Ser302) (34C7) Rabbit mAb	W	H, M
#2384 Phospho-IRS-1 (Ser302) Antibody	W	H, R, (M, Pg)
#2381 Phospho-IRS-1 (Ser307) Antibody	W, IP	H, M, R

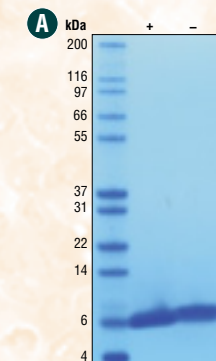
	Applications	Reactivity
NEW #5610 Phospho-IRS-1 (Ser318) (D51C3) Rabbit mAb	W, IP	H, M, (R)
#2580 Phospho-IRS-1 (Ser332/336) Antibody	W	R, (H, M)
#3203 Phospho-IRS-1 (Ser612) (C15H5) Rabbit mAb	W	H, M, R
#2386 Phospho-IRS-1 (Ser612) Antibody	W	H, M, R
#3193 Phospho-IRS-1 (Ser612) (L7B8) Mouse mAb	W	H, M, R
#2388 Phospho-IRS-1 (Ser636/639) Antibody	W	H, M, R
#2389 Phospho-IRS-1 (Ser789) Antibody	W	R, (M)
#3070 Phospho-IRS-1 (Tyr895) Antibody	W	R, (H, M)
#2385 Phospho-IRS-1 (Ser1101) Antibody	W, IP	H, M, R
#3066 Phospho-IRS-1 (Tyr1222) Antibody	W	R, (H, M)
#3407 IRS-1 (D23G12) Rabbit mAb	W, IP	H, M, R, Mk
#2390 IRS-1 (59G8) Rabbit mAb	W	H, M, R, (Pg)
#2382 IRS-1 Antibody	W, IP	H, M, R
#3194 IRS-1 (L3D12) Mouse mAb	W	H, M, R, Mk
#3089 IRS-2 (L1326) Antibody	W, IP	H, M, R
#4502 IRS-2 Antibody	W	H, M, R
#2833 NeuroD Antibody	W, IP	H, (M, R)
#3086 PASK (C70B2) Rabbit mAb	W, IP	H, M, R
NEW #5679 Pdx1 (D59H3) XP® Rabbit mAb	W, IP, IF-IC	R, (H)
#2437 Pdx1 Antibody	W, IP, IF-F, IF-IC	M, R, (H)
#4259 PGC1 α Antibody	W	M, (H, R)
NEW #5311 PTP1B Antibody	W	H
#2400 Synip (C51G6) Rabbit mAb	W	H, M, R
#5929 TBC1D1 (G689) Antibody	W, IP	M, (H)
#4629 TBC1D1 (V796) Antibody	W, IP	M
#2049 Tug Antibody	W, IP	H, M, R, Mk



Pdx1 (D59H3) XP® Rabbit mAb #5679: Confocal IF analysis of INS-1 (left) and KNRK (right) cells using #5679 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

Recombinant Cytokines and Growth Factors

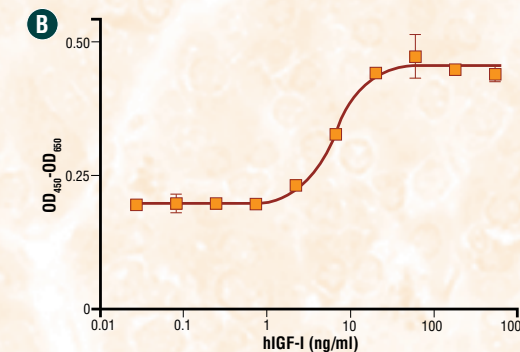
Cell Signaling Technology (CST) has developed recombinant cytokines and growth factors which are held to the same unparalleled quality standards as CST™ antibodies. All recombinant cytokines and growth factors are produced and bioassayed in-house, which ensures that our scientists can apply the highest standards of quality and consistency. Moreover, we can assure that milligram quantities of proteins are readily available for fast delivery.



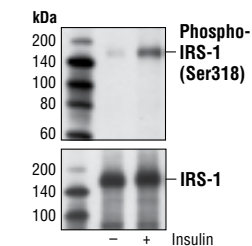
Human Insulin-like Growth Factor I (hIGF-I) #8917:

(A) Purity: The purity of recombinant hIGF-I was determined by SDS-PAGE of 6 μ g reduced (+) and non-reduced (-) recombinant hIGF-I #8917 and staining overnight with Coomassie Blue.

(B) Bioactivity: The proliferation of primary human dermal fibroblasts treated with increasing concentrations of hIGF-I #8917 was assessed. After 72-hour treatment with hIGF-I, cells were incubated with a tetrazolium salt and the OD₄₅₀ - OD₆₅₀ was determined.



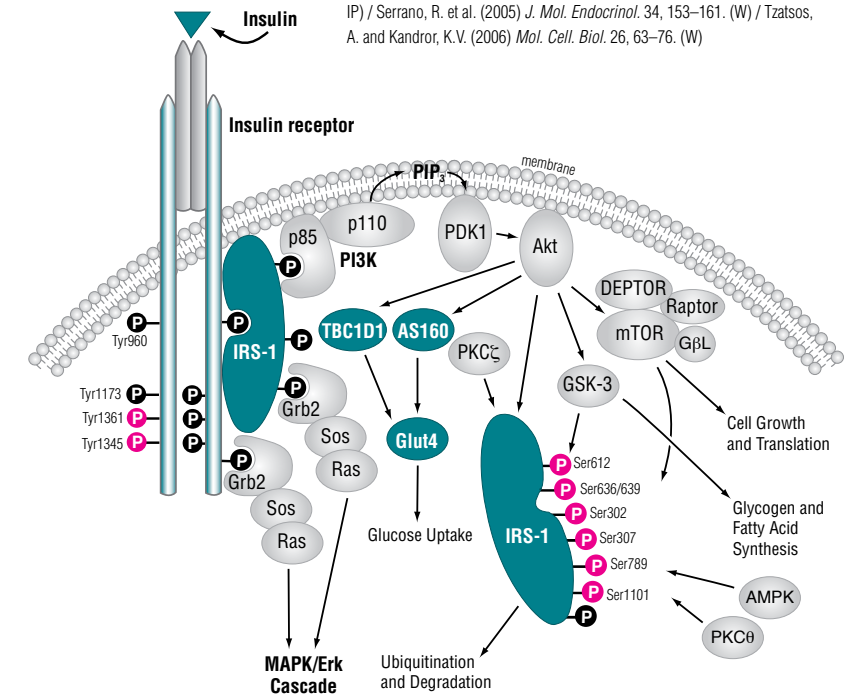
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Phospho-IRS-1 (Ser318) (D51C3) Rabbit mAb #5610: WB analysis of extracts from serum-starved C2C12 cells, untreated or insulin-treated (150 nM, 5 min), using #5610 (upper), or IRS-1 (D23G12) Rabbit mAb #3407 (lower).

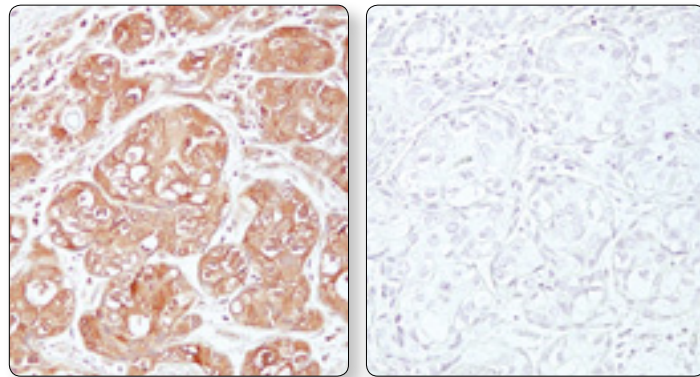
Application References:

- Phospho-IGF-1 Receptor (Tyr1131)/Insulin Receptor (Tyr1146) Antibody #3021:** Li, Y. et al. (2003) *Mol. Cell. Biol.* 23, 6255–6266. (W) / Nakagawa, Y. et al. (2006) *Nat. Med.* 12, 107–113. (W)
- IGF-1 Receptor β Antibody #3027:** Emaduddin, M. et al. (2008) *Proc. Natl. Acad. Sci. USA* 105, 2358–2362. (W, IP) / Randi, A.S. et al. (2006) *Toxicol. Sci.* 89, 83–92. (W)
- Phospho-IRS-1 (Ser307) Antibody #2381:** Bandyopadhyay, G.K. et al. (2005) *Diabetes* 54, 2351–2359. (W) / Werner, E.D. et al. (2004) *J. Biol. Chem.* 279, 35298–35305. (W)
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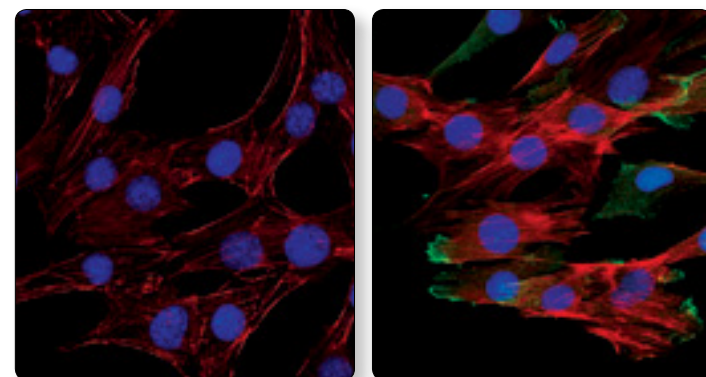
Akt Signaling

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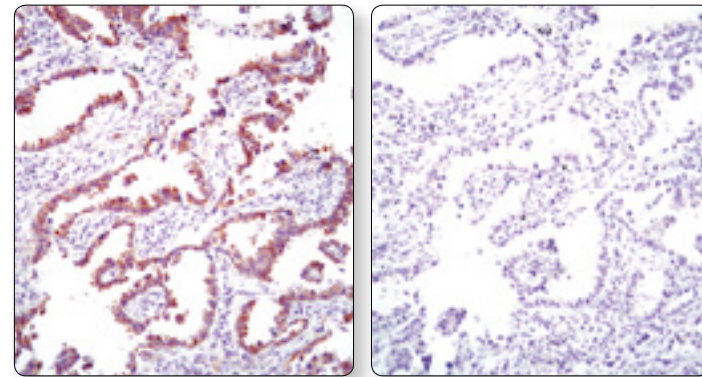


Akt1 (C73H10) Rabbit mAb #2938: IHC analysis of paraffin-embedded human breast carcinoma using #2938 in the presence of control peptide (left) or antigen-specific peptide (right).

	Applications	Reactivity
#4612 CTMP Antibody	W, IP, F	H, M, R
NEW #5672 DYRK1B (D40D1) Rabbit mAb	W, IP	H, M, R, (Mk)
#2703 DYRK1B Antibody	W, IP	H, M, R, Mk
#2599 Phospho-FoxO1 (Thr24)/FoxO3a (Thr32)/FoxO4 (Thr28) (4G6) Rabbit mAb	W	H, M, Mk
#9464 Phospho-FoxO1 (Thr24)/FoxO3a (Thr32) Antibody	W, IP	H, M, R, Mk
#9461 Phospho-FoxO1 (Ser256) Antibody	W	H, M, R, Mk, (C)
#2486 Phospho-FoxO1 (Ser319) Antibody	W	H
#2487 Phospho-FoxO1 (Ser319)/FoxO4 (Ser262) Antibody	W	H
#2880 FoxO1 (C29H4) Rabbit mAb	W, IHC-P, IF-IC	H, M, R, Mk
#9454 FoxO1 (L27) Antibody	W	H, M, R, Mk, (C)
#9466 Phospho-FoxO3a (Ser253) Antibody	W, IP	H, M, (R, C)
#9465 Phospho-FoxO3a (Ser318/321) Antibody	W, IP	H, M, R, Mk, (C)
#2497 FoxO3a (75D8) Rabbit mAb	W, IF-IC	H, M, R, Mk
#3938 FoxO3a (75D8) Rabbit mAb (Biotinylated)	W	H, M, R
#9467 FoxO3a Antibody	W, IHC-P	H, Mk, (M, R)
#9471 Phospho-FoxO4 (Ser193) Antibody	W	H, M, Hm
#2499 FoxO4 (55D4) Rabbit mAb	W, IP	H
#9472 FoxO4 Antibody	W	H, M, R, Mk
#4228 Phospho-PI3K p85 (Tyr458)/p55 (Tyr199) Antibody	W, IP	M, (H, R, Mk, B)

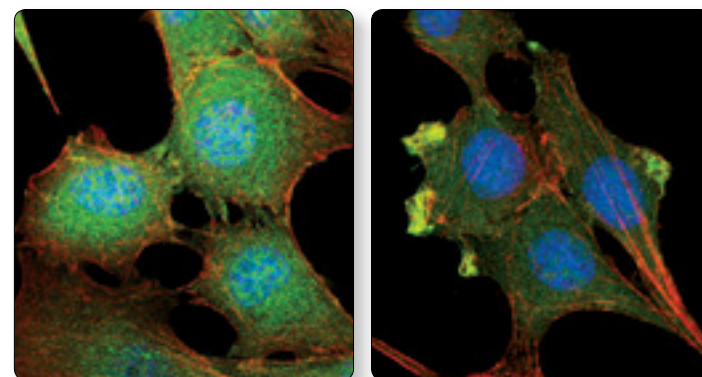


Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060: Confocal IF analysis of C2C12 cells, treated with LY294002 #9901 (left) or insulin (right), using #4060 (green). Actin filaments were labeled with Alexa Fluor® 555 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



PI3 Kinase p110α (C73F8) Rabbit mAb #4249: IHC analysis of paraffin-embedded human lung carcinoma using #4249 in the presence of control peptide (left) or antigen-specific peptide (right).

	Applications	Reactivity
#4257 PI3 Kinase p85 (19H8) Rabbit mAb	W, IP	H, M, R
#4292 PI3 Kinase p85 Antibody	W, IP	H, M, R
NEW #5569 PI3 Kinase p101 (D32A5) Rabbit mAb	W	H, M, (R)
#4249 PI3 Kinase p110α (C73F8) Rabbit mAb	W, IP, IHC-P	H, M, R, B
#4255 PI3 Kinase p110α Antibody	W, IP	H, M, R, (B)
#3011 PI3 Kinase p110β (C33D4) Rabbit mAb	W, IP	H
#5405 PI3 Kinase p110γ (D55D5) Rabbit mAb	W, IP	H, M, (R)
#4252 PI3 Kinase p110γ Antibody	W	H, M
#3358 PI3 Kinase Class III (D4E2) Rabbit mAb	W	H, M, R, Mk
#4263 PI3 Kinase Class III (D9A5) Rabbit mAb	W, IP	H, M, R, Mk
#3811 PI3 Kinase Class III Antibody	W, IP	H, M, R
#3438 Phospho-PDK1 (Ser241) (C49H2) Rabbit mAb	W, IP	H, M, R
#3061 Phospho-PDK1 (Ser241) Antibody	W, IP	H, M, R
#3062 PDK1 Antibody	W	H, M, R, Mk
NEW #5599 Phospho-SGK1 (Ser78) (D36D11) Rabbit mAb	W, IP	H, (M, R, Mk)
#3271 Phospho-SGK (Ser78) Antibody	W	H, (M, R)
#3272 SGK Antibody	W	H, (M, R)
NEW #7499 SGK2 (D7G1) Rabbit mAb	W	H, M, R
#5595 SGK2 Antibody	W, IP	H, M, R
NEW #5642 Phospho-SGK3 (Thr320) (D30E6) Rabbit mAb	W	H, (M, R, Mk)
#4227 SGK3 Antibody	W, IP	H, M, (R)



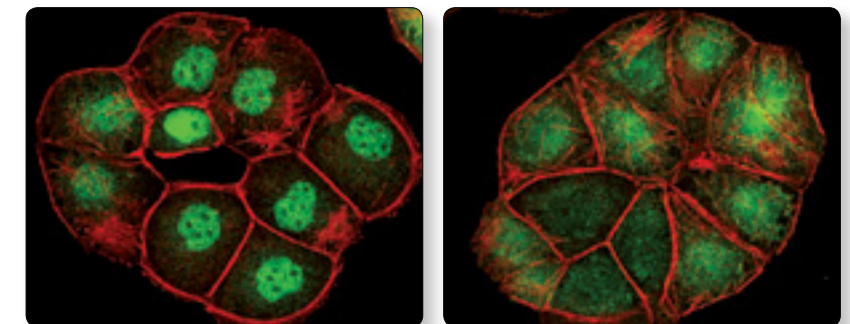
Akt (pan) (C67E7) Rabbit mAb #4691: Confocal IF analysis of C2C12 cells, treated with LY294002 #9901 (left) or insulin (right), using #4691 (green). Actin filaments were labeled with Alexa Fluor® 555 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

Akt Antibody Comparison

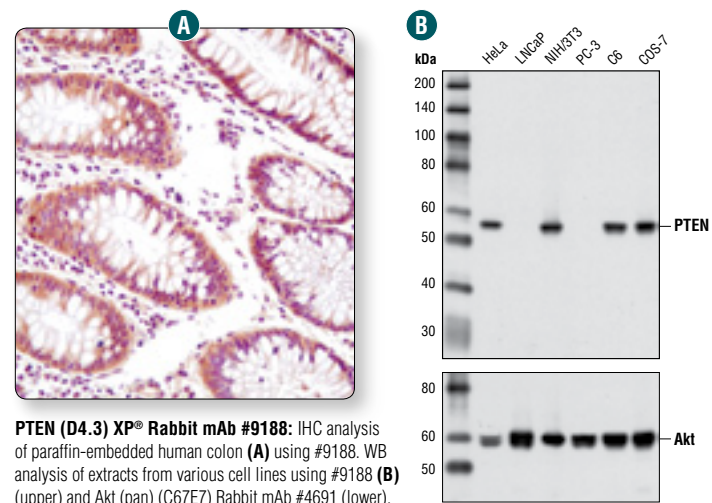
	Reactivity	WB	IP	IHC	Flow	IF
#4056 Phospho-Akt (Thr308) (244F9) Rabbit mAb	H, M, R, Mk	+++	+++	-	-	-
#2965 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb	H, M, R, Mk, Hm	++++	-	N/A	++++	++
#2918 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Mk, Hm	N/A	N/A	N/A	++++	-
#3375 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb (Alexa Fluor® 647 Conjugate)	H, M, R, Mk, Hm	N/A	N/A	N/A	++++	-
NEW #5056 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb (Biotinylated)	H, M, R, Mk, Hm	++++	N/T	N/A	N/T	N/A
#9275 Phospho-Akt (Thr308) Antibody	H, M, R, Hm	+++	+++	-	++	-
#5106 Phospho-Akt (Thr308) (L32A4) Mouse mAb	H, M, R, Mk	+++	-	-	-	-
#9267 Phospho-Akt (Thr450) Antibody	H, M, R	++	++	-	-	-
#4060 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb	H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg)	++++	++++	++++	++++	++++
#4071 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg)	N/A	N/A	N/A	++++	-
#4075 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Alexa Fluor® 647 Conjugate)	H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg)	N/A	N/A	N/A	++++	-
#5012 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Biotinylated)	H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg)	++++	N/T	N/A	++++	N/A
NEW #5171 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (HRP Conjugate)	H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg)	++++	N/T	N/A	N/A	N/A
NEW #5315 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (PE Conjugate)	H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg)	N/A	N/A	N/A	++++	N/A
NEW #4070 Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (Sepharose Bead Conjugate)	H, M, R, Hm, Dm, Z, B, (Mk, C, Dg)	N/A	++++	N/A	N/A	N/A
#4058 Phospho-Akt (Ser473) (193H12) Rabbit mAb	H, M, R	+++	+++	-	+++	+++
#2336 Phospho-Akt (Ser473) (193H12) Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R	N/A	N/A	N/A	+++	-
#2337 Phospho-Akt (Ser473) (193H12) Rabbit mAb (Alexa Fluor® 647 Conjugate)	H, M, R	N/A	N/A	N/A	+++	-
#3787 Phospho-Akt (Ser473) (736E11) Rabbit mAb	H, M, (R)	-	-	++	-	-
#9271 Phospho-Akt (Ser473) Antibody	H, M, R, Hm, Dm, B, Dg, Pg, (Mk, C, X)	+++	++	-	++	++
#4051 Phospho-Akt (Ser473) (587F11) Mouse mAb	H, M, R, Hm, (Mk)	+++	+++	-	-	-
#5102 Phospho-Akt (Ser473) (587F11) Mouse mAb (Biotinylated)	H, M, R, Hm, (Mk)	N/T	+++	N/A	N/T	N/A
#4054 Phospho-Drosophila Akt (Ser505) Antibody	Dm	++++	N/T	-	N/T	-
#4685 Akt (pan) (11E7) Rabbit mAb	H, M, R, Mk	+++	+++	+++	+++	+++
#4691 Akt (pan) (C67E7) Rabbit mAb	H, M, R, Mk, Dm	++++	++++	++++	++++	++++
#5084 Akt (pan) (C67E7) Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Mk, Dm	N/A	N/A	N/A	++++	++++
NEW #5186 Akt (pan) (C67E7) Rabbit mAb (Alexa Fluor® 647 Conjugate)	H, M, R, Mk, Dm	N/A	N/A	N/A	++++	++++
#4343 Akt (pan) (C67E7) Rabbit mAb (Sepharose Bead Conjugate)	H, M, R, Mk, Dm	N/A	++++	N/A	N/A	N/A
#9272 Akt Antibody	H, M, R, Hm, Mk, C, Dm, B, Pg, (Dg)	+++	+++	-	++	+++
#2920 Akt (pan) (40D4) Mouse mAb	H, M, R, Mk	+++	++++	+++	++++	+++
#4821 Akt (pan) (40D4) Mouse mAb (Biotinylated)	H, M, R, Mk	++++	++++	N/A	++++	N/A
#4298 Akt (pan) (40D4) Mouse mAb (HRP Conjugate)	H, M, R, Mk	++++	N/T	N/A	N/A	N/A
#3653 Akt (pan) (40D4) Mouse mAb (Sepharose Bead Conjugate)	H, M, R, Mk	N/A	++++	N/A	N/A	N/A
#2966 Akt (5G3) Mouse mAb	H, M, R, Hm	-	++++	-	++	+++
#2917 Akt (5G3) Mouse mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Hm	N/A	N/A	N/A	++++	-
#2944 Akt (5G3) Mouse mAb (Alexa Fluor® 647 Conjugate)	H, M, R, Hm	N/A	N/A	N/A	++++	-
#2938 Akt1 (C73H10) Rabbit mAb	H, M, R, Mk	++++	++++	++++	-	-
#2967 Akt1 (2H10) Mouse mAb	H, M, R	+++	+++	-	-	-
#2964 Akt2 (5B5) Rabbit mAb	H, M, R, Mk	+++	+++	-	-	-
#3063 Akt2 (D6G4) Rabbit mAb	H, M, R, Mk	++++	+++	-	-	-
#4090 Akt2 (D6G4) Rabbit mAb (Sepharose Bead Conjugated)	H, M, R, Mk	N/A	+++	N/A	N/A	N/A
#5239 Akt2 (L79B2) Mouse mAb	H, M, R, Mk	+++	+++	N/T	N/T	N/T
#3788 Akt3 (62A8) Rabbit mAb	H, M, R	+++	+++	-	-	-
#4059 Akt3 Antibody	H, M, R	++	++	-	N/T	N/T

Testing Key: ++++ Very Highly Recommended / +++ Highly Recommended / ++ Recommended / - Not Recommended / N/T Not Tested / N/A Not Applicable

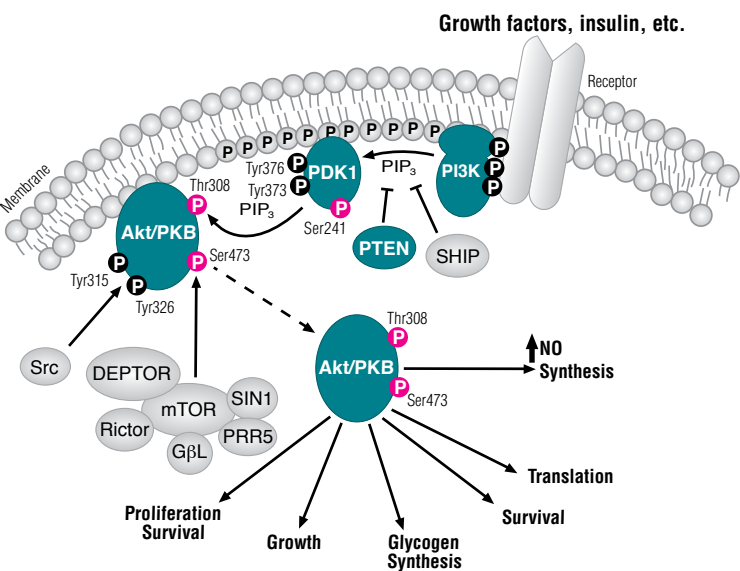
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FoxO1 (C29H4) Rabbit mAb #2880: Confocal IF analysis of IGROV-1 cells, treated with LY294002 #9901 (left) or insulin (right), using #2880 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



PTEN (D4.3) XP® Rabbit mAb #9188: IHC analysis of paraffin-embedded human colon (A) using #9188. WB analysis of extracts from various cell lines using #9188 (B) (upper) and Akt (pan) (C67E7) Rabbit mAb #4691 (lower).



PTEN Antibody Comparison

	Reactivity	WB	IP	IHC	Flow	IF
#9551 Phospho-PTEN (Ser380) Antibody	H, M, R	+++	++	-	N/T	-
#9549 Phospho-PTEN (Ser380/Thr382/383) (44A7) Rabbit mAb	H, M, R, Mk	++	-	-	N/T	-
#9554 Phospho-PTEN (Ser380/Thr382/383) Antibody	H, M, R	+++	++	N/T	N/T	-
#9569 Non-Phospho PTEN (Ser380/Thr382/Thr383) Antibody	M, R, (H)	++	++	N/T	N/T	-
#9188 PTEN (D4.3) XP® Rabbit mAb	H, M, R, Mk	++++	++	+++	-	-
#4005 PTEN (D4.3) XP® Rabbit mAb (Biotinylated)	H, M, R, Mk	++++	+++	N/A	N/T	N/A
#9559 PTEN (138G6) Rabbit mAb	H, M, R, Mk	++++	++	+++	-	-
#9583 PTEN (138G6) Rabbit mAb (Biotinylated)	H, M, R, Mk	+++	++	N/A	-	-
#5384 PTEN (D5G7) Rabbit mAb	H, M, R	++	-	-	-	-
#9552 PTEN Antibody	H, M, R, Hm, Mk	++	++	-	-	-
#9556 PTEN (26H9) Mouse mAb	H, M, R, Hm, Mk	++	++	-	N/T	-

Testing Key: ++++ Very Highly Recommended / +++ Highly Recommended / ++ Recommended / - Not Recommended / N/T Not Tested / N/A Not Applicable

Unparalleled Product Quality, Validation, and Technical Support

Application References:

Phospho-Akt (Thr308) Antibody #9275: Kawase, T. et al. (2009) *Cell* 136, 535–550. (W) / Fukuda, T. et al. (2003) *J. Biol. Chem.* 278, 51324–51333. (W) / Rane, M.J. et al. (2001) *J. Biol. Chem.* 276, 3517–3523. (W)

Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060: Gray, M.J. et al. (2008) *J. Natl. Cancer Inst.* 100, 109–20. (W) / Fos, C. et al. (2008) *J. Immunol.* 181, 1969–1977. (W) / Engelman, J.A. et al. (2008) *Nat. Med.* 14, 1351–1356. (IHC-P) / Guertin, D.A. et al. (2009) *Cancer Cell* 15, 148–159. (W, IHC-P) / Allard, D. et al. (2008) *J. Biol. Chem.* 283, 19739–19747. (IHC-P)

Phospho-Akt (Ser473) Antibody #9271: Baumann, C.A. et al. (2000) *Nature* 407, 202–207. (W) / Chandrasekar, B. et al. (2005) *J. Biol. Chem.* 280, 4553–4567. (W) / Engelman, J.A. et al. (2008) *Nat. Med.* 14, 1351–1356. (W) / Fujita, H. et al. (2005) *Biochem. Pharmacol.* 69, 1773–1784. (W) / Fukuda, T. et al. (2003) *J. Biol. Chem.* 278, 51324–51333. (W) / Fukuhara, S. et al. (2008) *Nat. Cell Biol.* 10, 513–526. (W) / Guo, A. et al. (2008) *Proc. Natl. Acad. Sci. USA* 105, 692–697. (W) / Patrucco, E. et al. (2004) *Cell* 118, 375–387. (W)

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Akt (5G3) Mouse mAb #2966: Murata, H. et al. (2003) *J. Biol. Chem.* 278, 50226–50233. (IP)

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Phospho-FoxO4 (Ser193) Antibody #9471: Eke, I. et al. (2010) *J. Clin. Invest.* 120, 2516–2527. (W) / Medema, R.H. et al. (2000) *Nature* 404, 782–787. (W)

Phospho-SGK (Ser78) Antibody #3271: Lee, C.T. et al. (2006) *Eur. J. Neurosci.* 23, 1311–1320. (W)

SGK Antibody #3272: Dong, X. et al. (2006) *J. Clin. Invest.* 116, 101–114. (W)

Phospho-PTEN (Ser380) Antibody #9551: Birle, D. et al. (2002) *J. Immunol.* 169, 286–291. (W)

PTEN (138G6) Rabbit mAb #9559: Guertin, D.A. et al. (2009) *Cancer Cell* 15, 148–159. (W) / Lagüe, M.N. et al. (2008) *Carcinogenesis* 29, 2062–2072. (IHC-P) / Saal, L.H. et al. (2008) *Nat. Genet.* 40, 102–107. (IHC-P) / Sangale, Z. et al. (2011) *Appl. Immunohistochem. Mol. Morphol.* 19, 173–183. (IHC-P)

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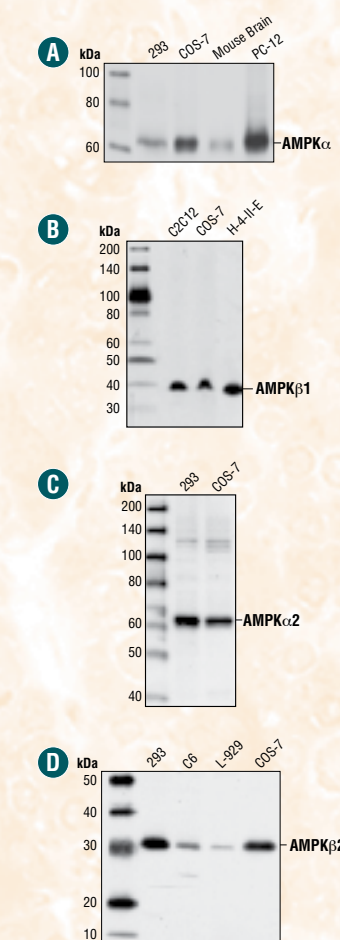
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- #9839 AMPK Subunit Antibody Sampler Kit**
AMPKα (23A3) Rabbit mAb #2603, AMPKα2 Ab #2757, AMPKβ1 (71C10) Rabbit mAb #4178, AMPKβ2 Ab #4148, AMPKγ1 Ab #4187, AMPKγ2 Ab #2536, AMPKγ3 Ab #2550, Anti-rabbit IgG, HRP-linked Ab #7074
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Phospho-Akt (Thr308) (C31E5E) Rabbit mAb #2965, Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060, Akt (pan) (C67E7) Rabbit mAb #4691, Phospho-c-Raf (Ser259) Ab #9421, Phospho-GSK-3β (Ser9) (5B3) Rabbit mAb #9323, Phospho-PTEN (Ser380) Ab #9551, Phospho-PDK1 (Ser241) (C49H1) Rabbit mAb #3438, Anti-rabbit IgG, HRP-linked Ab #7074, LY294002 (PI3 Kinase Inhibitor) #9901
- #9940 Akt Isoform Antibody Sampler Kit**
Akt1 (C73H10) Rabbit mAb #2938, Akt2 (D6G4) Rabbit mAb #3063, Akt3 (62A8) Rabbit mAb #3788, Akt (pan) (C67E7) Rabbit mAb #4691, C2C12 cell extracts - untreated, Anti-rabbit IgG, HRP-linked Ab #7074
- #4445 Autophagy Antibody Sampler Kit**
Atg3 Ab #3415, Atg5 (D1G9) Rabbit mAb #8540, Atg7 Ab #2631, Atg12 (D88H11) Rabbit mAb #4180, Beclin-1 (D40C5) Rabbit mAb #3495, LC3A (D50G8) XP® Rabbit mAb #4599, LC3B (D11) XP® Rabbit mAb #3868, Anti-rabbit IgG, HRP-linked Ab #7074
- #9924 Phospho-Estrogen Receptor α Antibody Sampler Kit**
Phospho-Estrogen Receptor α (Ser104/106) Ab #2517, Phospho-Estrogen Receptor α (Ser118) (16J4) Mouse mAb #2511, Phospho-Estrogen Receptor α (Ser167) (D1A3) Rabbit mAb #5587, Estrogen Receptor α (62A3) Mouse mAb #2512, Anti-rabbit IgG, HRP-linked Ab #7074, Anti-mouse IgG, HRP-linked Ab #7076
- #9946 Forkhead Signaling Antibody Sampler Kit**
Phospho-FoxO1 (Thr24)/FoxO3a (Thr32) Ab #9464, Phospho-FoxO1 (Ser256) Ab #9461, Phospho-FoxO1 (Thr24)/FoxO3a (Thr32)/FoxO4 (Thr28) (4G6) Rabbit mAb #2599, FoxO1 (C29H4) Rabbit mAb #2880, Phospho-FoxO3a (Ser253) Ab #9466, Phospho-FoxO3a (Ser318/321) Ab #9465, FoxO3a (75D8) Rabbit mAb #2497, FoxO4 Ab #9472, Anti-rabbit IgG, HRP-linked Ab #7074
- #9955 4E-BP Antibody Sampler Kit**
Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb #2855, Nonphospho-4E-BP1 (Thr46) (87D12) Rabbit mAb #4923, Phospho-4E-BP1 (Ser65) Ab #9451, Phospho-4E-BP1 (Thr70) II Ab #5078, 4E-BP1 (53H11) Rabbit mAb #9644, 4E-BP2 Ab #2845, Anti-rabbit IgG, HRP-linked Ab #7074
- #9369 GSK-3 Antibody Sampler Kit**
Phospho-GSK-3α (Ser21) (36E9) Rabbit mAb #9316, Phospho-GSK-3β (Ser9) (5B3) Rabbit mAb #9323, Phospho-GSK-3α/β (Ser21/9) (37F11) Rabbit mAb (GSK-3α Preferred) #9327, GSK-3α Ab #9338, GSK-3β (27C10) Rabbit mAb #9315, Anti-rabbit IgG, HRP-linked Ab #7074
- #3015 Insulin Receptor Substrate Antibody Sampler Kit**
Phospho-IRS-1 (Ser307) Ab #2381, Phospho-IRS-1 (Ser612) (C15H5) Rabbit mAb #3203, Phospho-IRS-1 (Ser636/639) Ab #2388, IRS-1 Ab #2382, IRS-2 Ab #4502, Anti-rabbit IgG, HRP-linked Ab #7074
- #9964 mTOR Pathway Antibody Sampler Kit**
Phospho-mTOR (Ser2448) (D9C2) XP® Rabbit mAb #5536, Phospho-mTOR (Ser2481) Ab #2974, mTOR (7C10) Rabbit mAb #2983, Raptor (24C12) Rabbit mAb #2280, Rictor (53A2) Rabbit mAb #2114, GβL (86B8) Rabbit mAb #3274, Anti-rabbit IgG, HRP-linked Ab #7074
- #9864 mTOR Regulation Antibody Sampler Kit**
Phospho-mTOR (Ser2448) (D9C2) XP® Rabbit mAb #5536, mTOR (7C10) Rabbit mAb #2983, Phospho-Raptor (Ser792) Ab #2083, RagC (D31G9) XP® Rabbit mAb #5466, Phospho-PRAS40 (Thr246) (C77D7) Rabbit mAb #2997, PRAS40 (D23C7) XP® Rabbit mAb #2691, Anti-rabbit IgG, HRP-linked Ab #7074
- #9862 mTOR Substrates Antibody Sampler Kit**
Phospho-mTOR (Ser2448) (D9C2) XP® Rabbit mAb #5536, mTOR (7C10) Rabbit mAb #2983, Phospho-p70 S6 Kinase (Thr389) (108D2) Rabbit mAb #9234, Phospho-p70 S6 Kinase (Ser371) Ab #9208, Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb #2855, Anti-rabbit IgG, HRP-linked Ab #7074
- #2903 p70 S6 Kinase Substrates Antibody Sampler Kit**
Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb #4858, Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP® Rabbit mAb #5364, Phospho-eIF4E (Ser422) Ab #3591, Phospho-eIF2α (Ser366) Ab #3691, Phospho-p70 S6 Kinase (Thr389) (108D2) Rabbit mAb #9234, p70 S6 Kinase (49D7) Rabbit mAb #2708, Anti-rabbit IgG, HRP-linked Ab #7074
- #9655 PI3 Kinase Antibody Sampler Kit**
Phospho-PI3K p85 (Tyr458)/p55 (Tyr199) Ab #4228, PI3 Kinase p85 (19H8) Rabbit mAb #4257, PI3 Kinase p110α (C73F8) Rabbit mAb #4249, PI3 Kinase p110β (C33D4) Rabbit mAb #3011, PI3 Kinase p110γ Ab #4252, PI3 Kinase Class III (D4E2) Rabbit mAb #3358, Anti-rabbit IgG, HRP-linked Ab #7074
- #9652 PTEN and PDK1 Antibody Sampler Kit**
Phospho-PTEN (Ser380/Thr382/383) (44A7) Rabbit mAb #9549, Non-Phospho PTEN (Ser380/Thr382/Thr383) Ab #9569, PTEN (D4.3) XP® Rabbit mAb #9188, Phospho-PDK1 (Ser241) (C49H2) Rabbit mAb #3438, PDK1 Ab #3062, Anti-rabbit IgG, HRP-linked Ab #7074
- #9918 Translational Control Antibody Sampler Kit**
Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060, Phospho-p70 S6 Kinase (Thr389) (108D2) Rabbit mAb #9234, Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb #4858, Phospho-eIF2α (Ser51) (D9G8) XP® Rabbit mAb #3398, Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb #2855, Phospho-eIF4E (Ser209) Ab #9741, LY294002 (PI3 Kinase Inhibitor) #9901, Rapamycin (FRAP/mTOR Inhibitor) #9904, Anti-rabbit IgG, HRP-linked Ab #7074
- #9956 ER Stress Antibody Sampler Kit**
BIP (C50B12) Rabbit mAb #3177, PERK (D11A8) Rabbit mAb #5683, Calnexin (C5C9) Rabbit mAb #2679, Ero1-Lα Ab #3264, IRE1α (14C10) Rabbit mAb #3294, PDI (C81H6) Rabbit mAb #3501, CHOP (L63F7) Mouse mAb #2895, Anti-rabbit IgG, HRP-linked Ab #7074, Anti-mouse IgG, HRP-linked Ab #7076
- #8107 SignalStain® Akt Pathway IHC Sampler Kit**
Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060, Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb #4858, Akt (pan) (C67E7) Rabbit mAb #4691, PTEN (D4.3) XP® Rabbit mAb #9188, SignalStain® Ab Diluent #8112, SignalSlide® Akt Family IHC Controls

AMPK Subunit Antibody Sampler Kit #9839

This kit offers an economical means to investigate the role played by all AMPK subunits in cellular homeostasis.



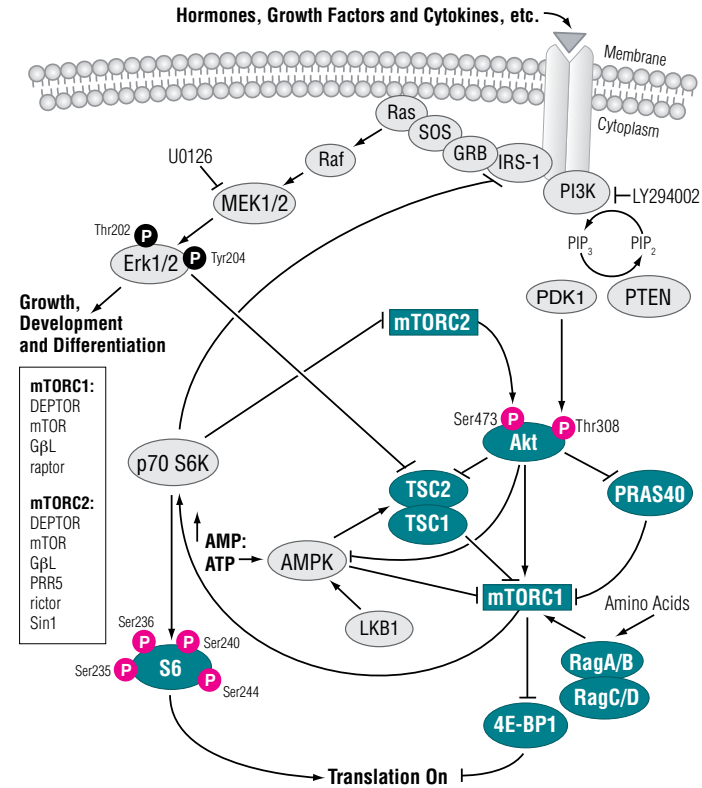
(A) AMPKα (23A3) Rabbit mAb #2603: WB analysis of extracts from various cell lines using #2603.

(B) AMPKβ1 (71C10) Rabbit mAb #4178: WB analysis of extracts from C2C12, COS-7, and H-4-II-E cells using #4178.

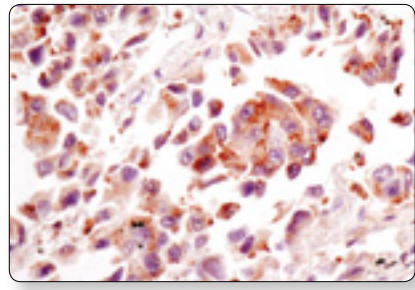
(C) AMPKα2 Antibody #2757: WB analysis of extracts from 293 and COS-7 cells using #2757.

(D) AMPKβ2 Antibody #4148: WB analysis of extracts from various cell lines using #4148.

mTOR Signaling



	Applications	Reactivity
#2845 4E-BP2 Antibody	W, IP, IHC-P, F	H, M, R, Mk, B
NEW #3697 FLCN (D14G9) Rabbit mAb	W, IP	H
#3274 GβL (86B8) Rabbit mAb	W, IP	H, M, R, Mk
NEW #5837 GβL (86B8) Rabbit mAb (Sepharose Bead Conjugate)	IP	H, M, R, Mk
#3227 GβL Antibody	W, IP, IHC-P	H, Mk
NEW #6935 Hamartin/TSC1 (D43E2) Rabbit mAb	W, IP	H, M, R
#4906 Hamartin/TSC1 Antibody	W, IP	H, M, R
#4963 Hamartin/TSC1 (1B2) Mouse mAb	W	H, M, R
NEW #5341 LysRS Antibody	W, IP	H, M, R
#2974 Phospho-mTOR (Ser2481) Antibody	W	H, M, R, Mk
NEW #5536 Phospho-mTOR (Ser2448) (D9C2) XP [®] Rabbit mAb	W, IP, IF-IC	H, M, (R)
#2976 Phospho-mTOR (Ser2448) (49F9) Rabbit mAb (IHC Specific)	IHC-P, IHC-F	H, (M, R)
#2971 Phospho-mTOR (Ser2448) Antibody	W	H, M, R, Mk
#2983 mTOR (7C10) Rabbit mAb	W, IHC-P, IF-IC, F	H, M, R, Mk
#5043 mTOR (7C10) Rabbit mAb (Alexa Fluor [®] 488 Conjugate)	F	H, M, R, Mk
NEW #5048 mTOR (7C10) Rabbit mAb (Alexa Fluor [®] 647 Conjugate)	F	H, M, R, Mk
#2972 mTOR Antibody	W, IP	H, M, R, Mk
#4517 mTOR (L27D4) Mouse mAb	W	H, M, R, Mk
NEW #5936 Phospho-PRAS40 (Ser183) Antibody	W, IP	H, M, (R)
#2997 Phospho-PRAS40 (Thr246) (C77D7) Rabbit mAb	W, IP, IHC-P	H, M, R, Mk
#2640 Phospho-PRAS40 (Thr246) Antibody	W	H, M, R, Mk
#2691 PRAS40 (D23C7) XP [®] Rabbit mAb	W, IP, IHC-P	H, M, R, Mk
#2610 PRAS40 Antibody	W	H, M, R, Mk



RagC (D31G9) XP[®] Rabbit mAb #5466: IHC analysis of paraffin-embedded human lung carcinoma using #5466.

Application References:

Phospho-4E-BP1 (Thr37/46) Antibody #9459: Ma, D. et al. (2009) *J. Cell. Physiol.* 219, 31–44. (W) / Ohne, Y. et al. (2008) *J. Biol. Chem.* 283, 31861–31870. (W) / Jiang, Y.P. et al. (2001) *J. Biol. Chem.* 276, 10943–10951. (W) / Ma, D. et al. (2009) *J. Cell. Physiol.* 219, 31–44. (W) / Wang, X. et al. (2003) *Mol. Cell. Biol.* 23, 1546–1557. (W)

Phospho-4E-BP1 (Ser65) Antibody #9451: Aoki, M. et al. (2001) *Proc. Natl. Acad. Sci. USA* 98, 136–141. (W) / Gingras, A.C. et al. (2001) *Genes Dev.* 15, 2852–2864. (W) / Jiang, Y.P. et al. (2001) *J. Biol. Chem.* 276, 10943–10951. (W) / Ma, D. et al. (2009) *J. Cell. Physiol.* 219, 31–44. (W) / Wang, X. et al. (2003) *Mol. Cell. Biol.* 23, 1546–1557. (W)

Phospho-4E-BP1 (Thr70) Antibody #9455: Gingras, A.C. et al. (2001) *Genes Dev.* 15, 2852–2864. (W) / Ma, D. et al. (2009) *J. Cell. Physiol.* 219, 31–44. (W)

4E-BP1 (53H11) Rabbit mAb #9644: Rong, L. et al. (2008) *RNA* 14, 1318–1327. (IHC-P)

4E-BP1 Antibody #9452: Banerjee, S. et al. (2002) *J. Virol.* 76, 5937–5948. (W) / Hara, T. et al. (2008) *J. Cell Biol.* 181, 497–510. (W) / Ohne, Y. et al. (2008) *J. Biol. Chem.* 283, 31861–31870. (W) / Rapisarda, A. et al. (2004) *Cancer Res.* 64, 1475–1482. (W) / Wu, M. et al. (2010) *Rejuvenation Res.* 13, 571–579. (W)

Phospho-mTOR (Ser2448) Antibody #2971: Bolster, D.R. et al. (2002) *J. Biol. Chem.* 277, 23977–23980. (W) / Hasumi, Y. et al. (2009) *Proc. Natl. Acad. Sci. USA* 106, 18722–18727. (W) / Prieto, A.L. et al. (2007) *Neuroscience* 150, 319–334. (W) / Shavlakadze, T. et al. (2010) *J. Cell Sci.* 123, 960–971. (W) / Suzuki, A. et al. (2004) *Mol. Cell. Biol.* 24, 3526–3535. (W)

mTOR Antibody #2972: Hosokawa, N. et al. (2009) *Mol. Biol. Cell* 20, 1981–1991. (W) / Shavlakadze, T. et al. (2010) *J. Cell Sci.* 123, 960–971. (W) / Suzuki, A. et al. (2004) *Mol. Cell. Biol.* 24, 3526–3535. (W) / Takahara, T. et al. (2006) *J. Biol. Chem.* 281, 28605–28614. (W)

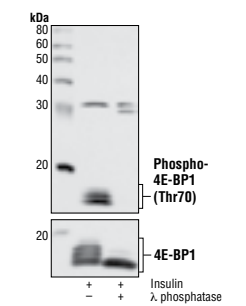
Phospho-Tuberin/TSC2 (Thr1462) Antibody #3611: Andreozzi, F. et al. (2004) *Endocrinol.* 145, 2845–2857. (W) / Manning, B.D. et al. (2002) *Mol. Cell* 10, 151–162. (W)

	Applications	Reactivity
#4357 RagA (D8B5) Rabbit mAb	W, IP	H, M, R, Mk
#3830 RagB Antibody	W	H
NEW #5466 RagC (D31G9) XP [®] Rabbit mAb	W, IP, IHC-P	H, M, R, Mk
#9480 RagC (D8H5) Rabbit mAb	W, IP, IF-IC, F	H, M, R, Mk
#3360 RagC Antibody	W, IP, IF-IC	H, M, R, Mk
#4470 RagD Antibody	W	H
#2083 Phospho-Raptor (Ser792) Antibody	W	H, M, R
#2280 Raptor (24C12) Rabbit mAb	W, IP	H, M, R, Mk
NEW #5382 Raptor (24C12) Rabbit mAb (Sepharose Bead Conjugate)	IP	H, M, R, Mk
#4935 Rheb Antibody	W, IHC-P, F	H, M, R, Sc, (B)
#3806 Phospho-Rictor (Thr1135) (D30A3) Rabbit mAb	W	H, M, Mk
#9476 Rictor (D16H9) Rabbit mAb	W, IP	H, M
#2114 Rictor (53A2) Rabbit mAb	W	H, M, R, Mk
#2140 Rictor Antibody	W	H, M, R, Mk
NEW #5844 RMP Antibody	W, IP	H, M, R, Mk
#3615 Phospho-Tuberin/TSC2 (Ser939) Antibody	W	H, M
#3616 Phospho-Tuberin/TSC2 (Ser1254) Antibody	W	M, R, (H)
NEW #5584 Phospho-Tuberin/TSC2 (Ser1387) Antibody	W, IP	H, M, R, Mk
#3617 Phospho-Tuberin/TSC2 (Thr1462) (5B12) Rabbit mAb	W, IP	H, M, R
#3611 Phospho-Tuberin/TSC2 (Thr1462) Antibody	W	H, M, (R)
#3614 Phospho-Tuberin/TSC2 (Tyr1571) Antibody	W	M, Mk, (H)
NEW #4308 Tuberin/TSC2 (D93F12) XP [®] Rabbit mAb	W, IP, IF-IC	H, M, R, Hm, Mk
#3990 Tuberin/TSC2 (D57A9) Rabbit mAb	W, IP	H, M, R
#3635 Tuberin/TSC2 (28A7) Rabbit mAb	W, IP	H
#3612 Tuberin/TSC2 Antibody	W	H, M, R, Mk

4E-BP1 Antibody Comparison

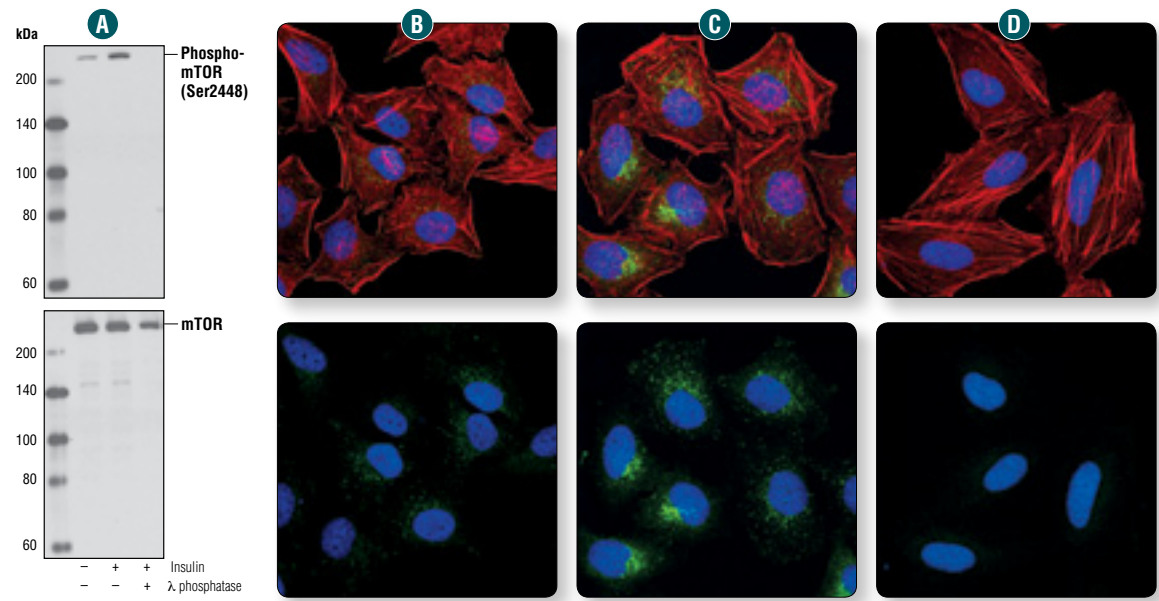
	Reactivity	WB	IP	IHC	Flow	IF
#2855 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb	H, M, R, Mk, Dm	+++	N/T	++++	++	+++
#2846 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (Alexa Fluor [®] 488 Conjugate)	H, M, R, Mk, Dm	N/A	N/A	N/A	++	N/T
#5123 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (Alexa Fluor [®] 647 Conjugate)	H, M, R, Mk, Dm	N/A	N/A	N/A	++	N/T
#3929 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (Biotinylated)	H, M, R, Mk, Dm	+++	N/T	N/A	++	N/A
#9459 Phospho-4E-BP1 (Thr37/46) Antibody	H, M, R, Mk	++	N/T	N/T	N/T	–
#4923 Nonphospho-4E-BP1 (Thr46) (87D12) Rabbit mAb	H, M, R, Mk	++	–	N/T	++	N/T
#9456 Phospho-4E-BP1 (Ser65) (174A9) Rabbit mAb	H, Mk	++	++	–	–	–
#9451 Phospho-4E-BP1 (Ser65) Antibody	H, M, R, Mk	++	++	–	N/T	–
#9455 Phospho-4E-BP1 (Thr70) Antibody	H, M, R, Mk	++	++	–	N/T	–
NEW #5078 Phospho-4E-BP1 (Thr70) II Antibody	H, M, R, Mk	++	++	–	N/T	N/T
#9644 4E-BP1 (53H11) Rabbit mAb	H, M, R, Mk	++++	++	++++	+++	+++
#9452 4E-BP1 Antibody	H, M, R, Mk	++++	++	–	–	–

Testing Key: ++++ Very Highly Recommended / +++ Highly Recommended / ++ Recommended / – Not Recommended / N/T Not Tested / N/A Not Applicable

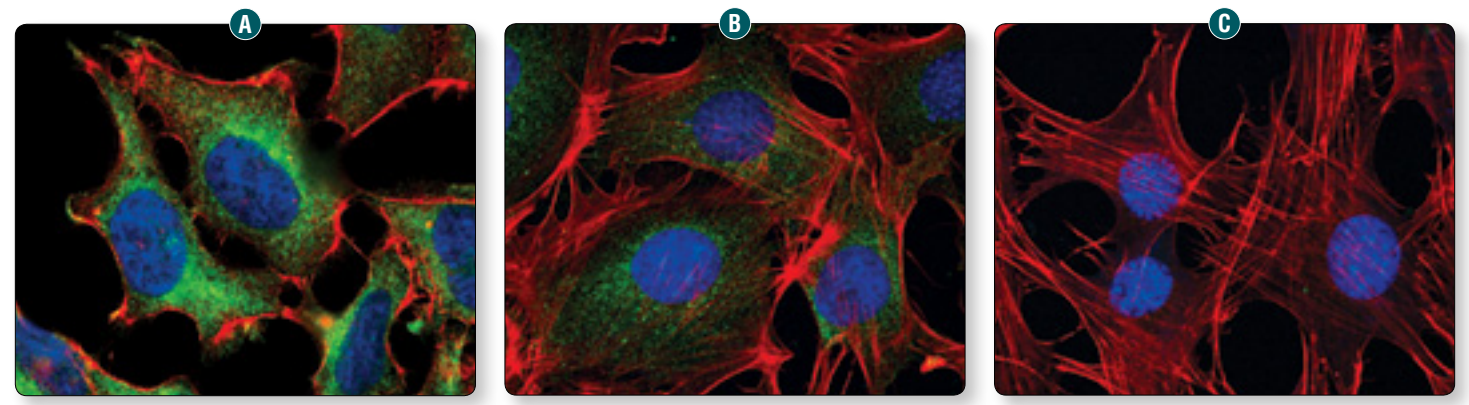


Phospho-4E-BP1 (Thr70) II Antibody #5078: WB analysis of extracts from serum-starved HeLa cells, treated with insulin alone (100 nM), or with insulin and λ phosphatase, using #5078 (upper) or 4E-BP1 (53H11) Rabbit mAb #9644 (lower).

Unparalleled Product Quality, Validation, and Technical Support

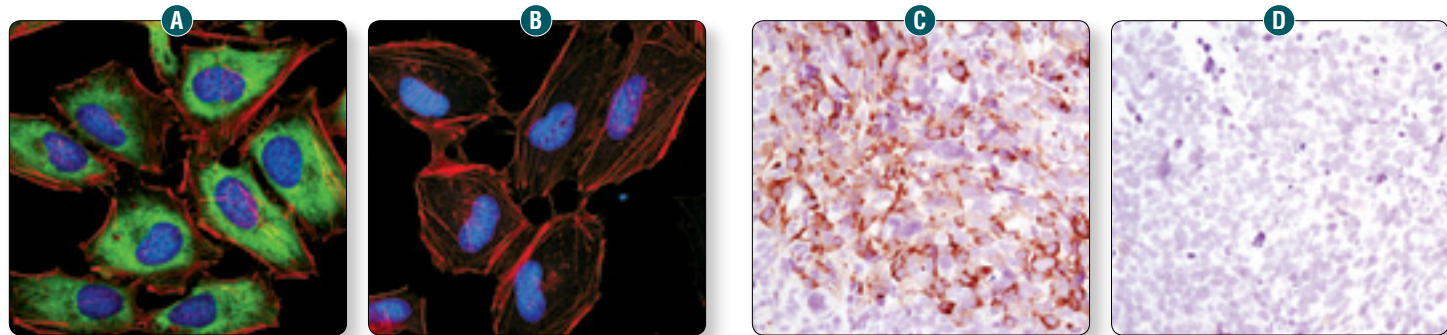


Phospho-mTOR (Ser2448) (D9C2) XP[®] Rabbit mAb #5536: WB analysis of extracts from serum-starved NIH/3T3 cells (A), untreated or insulin-treated (150 nM, 5 min), alone or in combination with λ phosphatase, using #5536 (upper) or mTOR (7C10) Rabbit mAb #2983 (lower). Confocal IF analysis of HeLa cells, treated with rapamycin #9904 (10 μM, 2 hr) (B), insulin (150 nM, 6 min) (C), or insulin and λ phosphatase (D), using #5536 (green). Actin filaments were labeled with DY-554 phalloidin (red, top panel only). Blue pseudocolor = DRAQS[®] #4084 (fluorescent DNA dye).



Tuberin/TSC2 (D93F12) XP[®] Rabbit mAb #4308: Confocal IF analysis of SH-SY5Y (A), wild-type MEF (B), and TSC2-deficient (-/-) MEF cells (C) using #4308 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQS[®] #4084 (fluorescent DNA dye).

mTOR Signaling, cont.

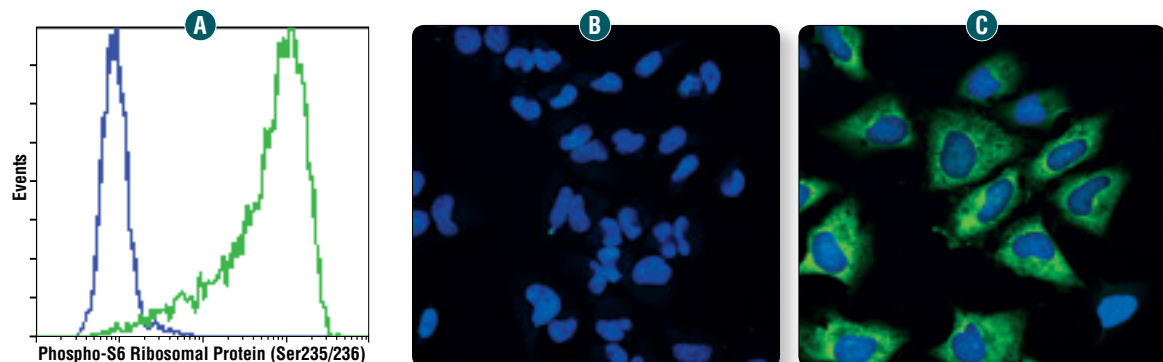


Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP® Rabbit mAb #5364: Confocal IF analysis of HeLa cells, treated with insulin (A) or LY294002 #9901 (B), using #5364 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye). IHC analysis of paraffin-embedded Rh30 xenograft, untreated (C) or treated with rapamycin #9904 (D), using #5364.

S6 Ribosomal Protein Antibody Comparison

	Reactivity	WB	IP	IHC	Flow	IF
#4858 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb	H, M, R, Mk, Sc	++++	-	++++	+++	++++
#4803 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Mk, Sc	N/A	N/A	N/A	+++	+++
#3985 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb (Alexa Fluor® 555 Conjugate)	H, M, R, Mk, Sc	N/A	N/A	-	-	+++
#4851 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb (Alexa Fluor® 647 Conjugate)	H, M, R, Mk, Sc	N/A	N/A	N/A	+++	+++
#3945 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb (Biotinylated)	H, M, R, Mk, Sc	+++	N/A	N/A	+++	N/A
NEW #5316 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb (PE Conjugate)	H, M, R, Mk, Sc	N/A	N/A	N/A	+++	N/A
#4856 Phospho-S6 Ribosomal Protein (Ser235/236) (2F9) Rabbit mAb	H, M, R	++	N/T	-	++	++
#4854 Phospho-S6 Ribosomal Protein (Ser235/236) (2F9) Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R	N/A	N/A	N/A	++	++
#4857 Phospho-S6 Ribosomal Protein (Ser235/236) (91B2) Rabbit mAb	H, M, R	++	N/T	+++	N/T	++
#2211 Phospho-S6 Ribosomal Protein (Ser235/236) Antibody	H, M, R, Mk, Sc, (C, X)	+++	++	+++	++	++
NEW #5364 Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP® Rabbit mAb	H, M, R, Mk	++++	+++	++++	++++	++++
NEW #5018 Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Mk	N/A	N/A	N/A	+++	+++
#2215 Phospho-S6 Ribosomal Protein (Ser240/244) Antibody	H, M, R, Mk, Z, (C, X)	+++	++	-	++	+++
#2217 S6 Ribosomal Protein (5G10) Rabbit mAb	H, M, R, Mk	++	N/T	+++	-	+++
#2317 S6 Ribosomal Protein (54D2) Mouse mAb	H, M, R, Mk, Dm	++	++	++++	++	++
NEW #5317 S6 Ribosomal Protein (54D2) Mouse mAb (Alexa Fluor® 488 Conjugate)	H, M, R, Mk, Dm	N/A	N/A	N/A	+++	+++
NEW #5548 S6 Ribosomal Protein (54D2) Mouse mAb (Alexa Fluor® 647 Conjugate)	H, M, R, Mk, Dm	N/A	N/A	N/A	+++	+++
#3944 S6 Ribosomal Protein (54D2) Mouse mAb (Biotinylated)	H, M, R, Mk, Dm	+++	N/A	N/A	++	N/A

Testing Key: ++++ Very Highly Recommended / +++ Highly Recommended / ++ Recommended / - Not Recommended / N/T Not Tested / N/A Not Applicable



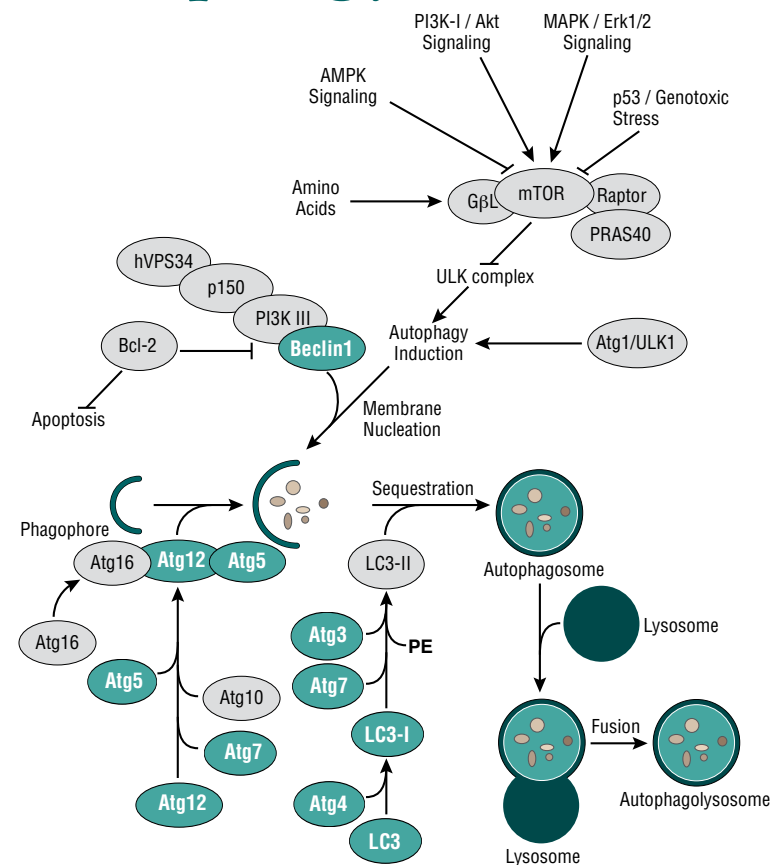
Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate) #4803: Flow cytometric analysis of Jurkat cells (A), untreated (green) or treated with LY294002 #9901, wortmannin #9951, and U0126 #9903 (blue), using #4803. Confocal IF analysis of HeLa cells, treated with wortmannin #9951 and U0126 #9903 (B) or TPA #4174 (C), using #4803. Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

Application References:

Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP® Rabbit mAb #4858: Engelman, J.A. et al. (2008) *Nat. Med.* 14, 1351-1356. (IHC-P) / Guertin, D.A. et al. (2009) *Cancer Cell* 15, 148-159. (IHC-P) / Wu, M. et al. (2010) *Rejuvenation Res.* 13, 571-579. (W)

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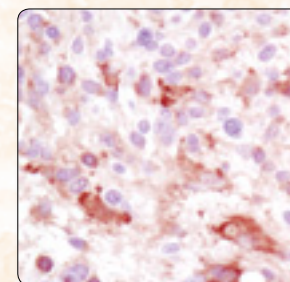
Autophagy



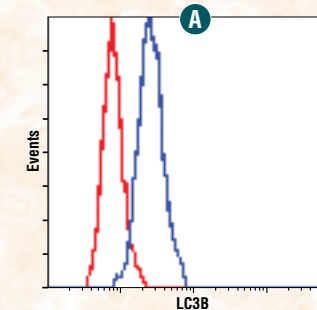
	Applications	Reactivity
#3415 Atg3 Antibody	W	H, M, R, (Mk, C, X, B, Dg)
NEW #5299 Atg4B Antibody	W	H, M, R
NEW #5262 Atg4C Antibody	W, IP	H, M, Mk
NEW #8540 Atg5 (D1G9) Rabbit mAb	W, IP	H, M, R, Mk, (B, Dg, Pg)
NEW #9980 Atg5 (D5G3) Rabbit mAb	W, IP	H, Mk
#2630 Atg5 Antibody	W, IP	H, Mk
#2631 Atg7 Antibody	W	H, M, R, (Mk)
#4180 Atg12 (D88H11) Rabbit mAb	W, IP	H, M, R, Mk
#2010 Atg12 Antibody (Human Specific)	W, IP, IF-IC	H
#2011 Atg12 Antibody (Mouse Specific)	W, IP, IF-IC	M
NEW #5504 Atg14 Antibody	W, IP	H, M, R, (Mk)
#3495 Beclin-1 (D40C5) Rabbit mAb	W, IP	H, M, R, Mk
#3738 Beclin-1 Antibody	W, IP	H, M, R
#4599 LC3A (D50G8) XP® Rabbit mAb	W, IP, IHC-P, IF-IC, F	H, M, R, (Mk, Dg)
#4108 LC3A/B Antibody	W, IF-IC, F	H, M, R, (Mk, C, X, Z, Dg)
#3868 LC3B (D11) XP® Rabbit mAb	W, IP, IHC-P, IF-IC, F	H, M, R, (Mk, B, Pg)
#2775 LC3B Antibody	W, IF-IC, F	H, M, R, (Mk, B, Pg)
NEW #5202 NBR1 Antibody	W, IP	H, M, R
#3358 PI3 Kinase Class III (D4E2) Rabbit mAb	W	H, M, R, Mk
#4263 PI3 Kinase Class III (D9A5) Rabbit mAb	W, IP	H, M, R, Mk
#3811 PI3 Kinase Class III Antibody	W, IP	H, M, R
NEW #5114 SQSTM1/p62 Antibody	W	H, M, R, (Mk)
#4634 Phospho-ULK1 (Ser467) Antibody	W	M, (H, R, Mk)
NEW #5869 Phospho-ULK1 (Ser555) (D1H4) Rabbit mAb	W, IP	H, M, (R)
NEW #6888 Phospho-ULK1 (Ser757) Antibody	W, IP	H, M, Mk
#4776 ULK1 (A705) Antibody	W	H
#4773 ULK1 (R600) Antibody	W	H, Mk
NEW #5320 UVRAG Antibody	W, IP	H, M

LC3

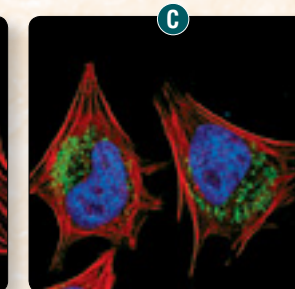
Autophagy is a catabolic process for the autophagosomic-lysosomal degradation of bulk cytoplasmic cellular contents and is generally activated by conditions of nutrient deprivation, but has also been associated with a number of physiological processes including development, differentiation, neurodegenerative diseases, infection, and cancer. Autophagy marker Light Chain 3 (LC3) was originally identified as a subunit of microtubule-associated proteins 1A and 1B (termed MAP1LC3), and subsequently found to contain similarity to the yeast protein Apg8/Aut7/Cvt5 critical for autophagy. Three human LC3 isoforms (LC3A, LC3B, and LC3C) undergo post-translational modifications during autophagy. Cleavage of LC3 at the carboxy terminus immediately following synthesis yields the cytosolic LC3-I form. During autophagy, LC3-I is converted to LC3-II through lipidation by a ubiquitin-like system involving Atg7 and Atg3 that allows for LC3 to become associated with autophagic vesicles.



LC3A (D50G8) XP® Rabbit mAb #4599: IHC analysis of paraffin-embedded human glioblastoma multiforme using #4599.



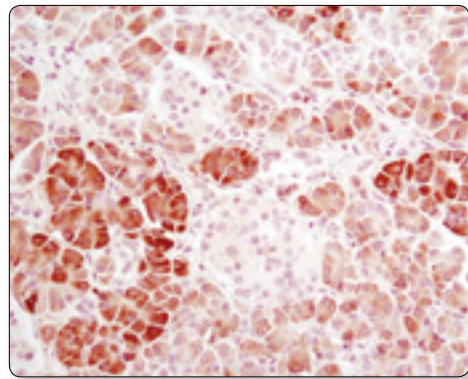
LC3B (D11) XP® Rabbit mAb #3868: Flow cytometric analysis of HeLa cells (A) using #3868 (blue) compared to a nonspecific negative control antibody (red). Confocal IF analysis of HeLa cells, untreated (B) or chloroquine-treated (C), using #3868 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



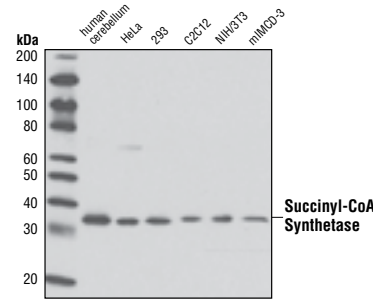
Glucose Metabolism/Warburg Effect

Please visit www.cellsignal.com for a complete product listing.

Unparalleled Product Quality, Validation, and Technical Support



α-Amylase (D55H10) XP® Rabbit mAb #3796: IHC analysis of paraffin-embedded human pancreas using #3796.



Succinyl-CoA Synthetase Antibody #5557: WB analysis of extracts from various cell lines and tissue using #5557.

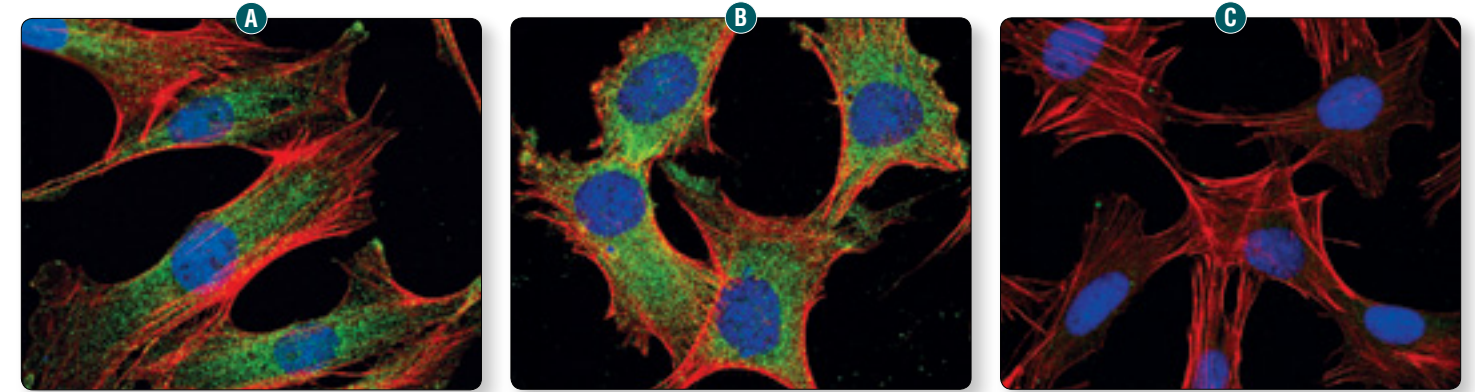
Application References:

Phospho-GSK-3β (Ser9) Antibody #9336: Fujita, H. et al. (2005) *Biochem. Pharmacol.* 69, 1773–1784. (W) / Guertin, D.A. et al. (2009) *Cancer Cell* 15, 148–159. (W) / Hirai, S. et al. (2006) *J. Neurosci.* 26, 11992–12002. (W) / Vitari, A.C. et al. (2004) *Biochem. J.* 378, 257–268. (W) / Zhao Y. (2004) *Am. J. Transplantation* 4, 1399–1407. (W)

Phospho-GSK-3α/β (Ser21/9) Antibody #9331: Allard, D. et al. (2008) *J. Biol. Chem.* 283, 19739–19747. (W) / Buss, H. et al. (2004) *J. Biol. Chem.* 279, 49571–49575. (W) / Zheng, W.H. et al. (2000) *J. Biol. Chem.* 275, 39152–39158. (W)

	Applications	Reactivity
#3188 Aldolase Antibody	W	H, M, R, Hm, Mk
#3796 α-Amylase (D55H10) XP® Rabbit mAb	W, IP, IHC-P	H, R, (M)
#4017 α-Amylase Antibody	W	R, (H, M)
#4850 COX IV (3E11) Rabbit mAb	W, IP, IHC-P, IHC-F, IF-IC, F	H, R, Mk, Z, B, Pg
#4853 COX IV (3E11) Rabbit mAb (Alexa Fluor® 488 Conjugate)	IF-F, IF-IC, F	H, R, Mk, Z, B, Pg
#6014 COX IV (3E11) Rabbit mAb (Biotinylated)	W	H, R, Mk, Z, B, Pg
#5247 COX IV (3E11) Rabbit mAb (HRP Conjugate)	W	H, R, Mk, Z, B, Pg
#4844 COX IV Antibody	W, IP, IHC-P, IF-IC, F	H, M, R, Mk, B
NEW #5556 DLST Antibody	W, IP	H, M, R, Mk
#3810 Enolase-1 Antibody	W, IP	H, M, R, Mk
#9536 Enolase-2 Antibody	W	H, M
NEW #5174 GAPDH (D16H11) XP® Rabbit mAb	W, IHC-P, IF-IC	H, M, R, Mk
#2118 GAPDH (14C10) Rabbit mAb	W, IHC-P, IF-IC, F	H, M, R, Mk
#3906 GAPDH (14C10) Rabbit mAb (Alexa Fluor® 488 Conjugate)	IF-IC, F	H, M, R, Mk
#3964 GAPDH (14C10) Rabbit mAb (Alexa Fluor® 555 Conjugate)	IF-IC	H, M, R, Mk
#3907 GAPDH (14C10) Rabbit mAb (Alexa Fluor® 647 Conjugate)	IF-IC, F	H, M, R, Mk
#5014 GAPDH (14C10) Rabbit mAb (Biotinylated)	W, IF-IC, F	H, M, R, Mk
#3683 GAPDH (14C10) Rabbit mAb (HRP Conjugate)	W	H, M, R, Mk
NEW #5322 GFAT1 (D12F4) Rabbit mAb	W, IP	H, R
#3818 GFAT1 Antibody	W, IP	H
#3891 Phospho-Glycogen Synthase (Ser641) Antibody	W, IP, IHC-P	H, M, R
#3886 Glycogen Synthase (15B1) Rabbit mAb	W, IP, IHC-P	H, M, R
#3893 Glycogen Synthase Antibody	W, IP, F	H, M, R
#9316 Phospho-GSK-3α (Ser21) (36E9) Rabbit mAb	W, IHC-P	H, M, R, Mk
#9337 Phospho-GSK-3α (Ser21) (46H12) Mouse mAb	W	H, M, R, Mk, Z
#9327 Phospho-GSK-3α/β (Ser21/9) (37F11) Rabbit mAb (GSK-3α Preferred)	W, IP	H, M, R, Mk
#9331 Phospho-GSK-3α/β (Ser21/9) Antibody	W, IHC-P	H, M, R, Mk, Z
NEW #5676 GSK-3α/β (D75D3) XP® Rabbit mAb	W, IP, IF-IC	H, M, R, Hm, Mk
NEW #5558 Phospho-GSK-3β (Ser9) (D85E12) XP® Rabbit mAb	W, IP, IF-IC, F	H, M, R, Hm

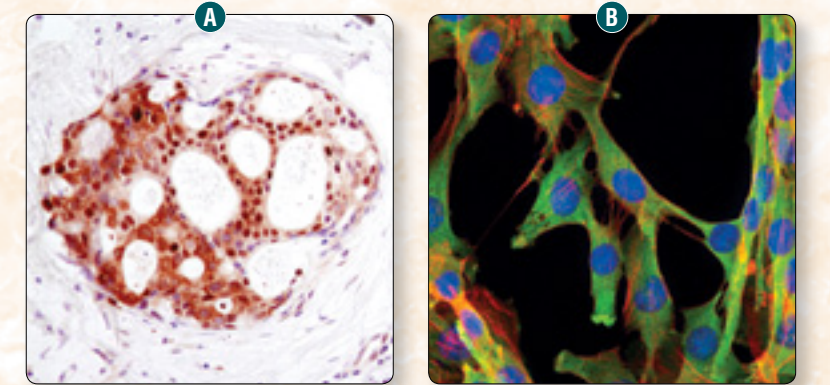
	Applications	Reactivity
#9322 Phospho-GSK-3β (Ser9) (D3A4) Rabbit mAb	W, IP	H, M, R
#9323 Phospho-GSK-3β (Ser9) (5B3) Rabbit mAb	W, IHC-P, IF-IC	H, M, R, Mk
#9336 Phospho-GSK-3β (Ser9) Antibody	W	H, M, R, Mk, (Z)
#3548 Phospho-GSK-3β (Thr390) Antibody	W	H
NEW #4818 GSK-3α (D80D1) XP® Rabbit mAb	IF-IC, F	H, M, (R)
NEW #4337 GSK-3α (D80E6) Rabbit mAb	W, IP	H, M, R, Hm, Mk
#9338 GSK-3α Antibody	W	H, M, R, Mk
#9315 GSK-3β (27C10) Rabbit mAb	W, IP, IHC-P	H, M, R, Mk
#2024 Hexokinase I (C35C4) Rabbit mAb	W, IP, IHC-P, IF-IC	H, M
#3689 Hexokinase I (C35C4) Rabbit mAb (Alexa Fluor® 488 Conjugate)	IF-IC, F	H, M
#3540 Hexokinase I (C35C4) Rabbit mAb (Alexa Fluor® 647 Conjugate)	IF-IC, F	H, M
#2804 Hexokinase I Antibody	W	H, Mk, (B)
#2867 Hexokinase II (C64G5) Rabbit mAb	W, IHC-P, IF-IC	H, M, R, Mk
#2106 Hexokinase II Antibody	W, IP	H, Mk
#3997 IDH1 Antibody	W	H, M
#3558 LDHA/LDHC (C28H7) Rabbit mAb	W, IHC-P	H, M, R, Mk
#3582 LDHA (C4B5) Rabbit mAb	W, IHC-P, IF-IC	H, Mk
#2012 LDHA Antibody	W	H, M, R, Mk
#5058 NPC1L1 Antibody	W, IP	H
#3820 PDHK1 (C47H1) Rabbit mAb	W, IP	H, M, R, Mk
NEW #5412 PFKP Antibody	W, IP	H, Mk
#3106 PKM1/2 (C5E6) Rabbit mAb	W, IP	H, M, R
#3190 PKM1/2 (C103A3) Rabbit mAb	W, IF-IC	H, M, R, Mk
#3186 PKM1/2 Antibody	W	H, M, R, (C, X)
#3827 Phospho-PKM2 (Tyr105) Antibody	W	H, M, R, Mk
#4053 PKM2 (D78A4) XP® Rabbit mAb	W, IP, IHC-P, IF-IC	H, M, R, Mk
#3198 PKM2 Antibody	W, IHC-P, IHC-F	H, M, R, Mk
#3205 Pyruvate Dehydrogenase (C54G1) Rabbit mAb	W, IHC-P	H, M, R, Mk
#2784 Pyruvate Dehydrogenase Antibody	W, IF-IC	H, M, R, Mk
NEW #5839 SDHA Antibody	W, IF-IC	H, M, R, Mk
#5042 SGLT1 Antibody	W	H, R
NEW #5557 Succinyl-CoA Synthetase Antibody	W, IP	H, M, R
#4371 UGT Antibody	W	H, M, R



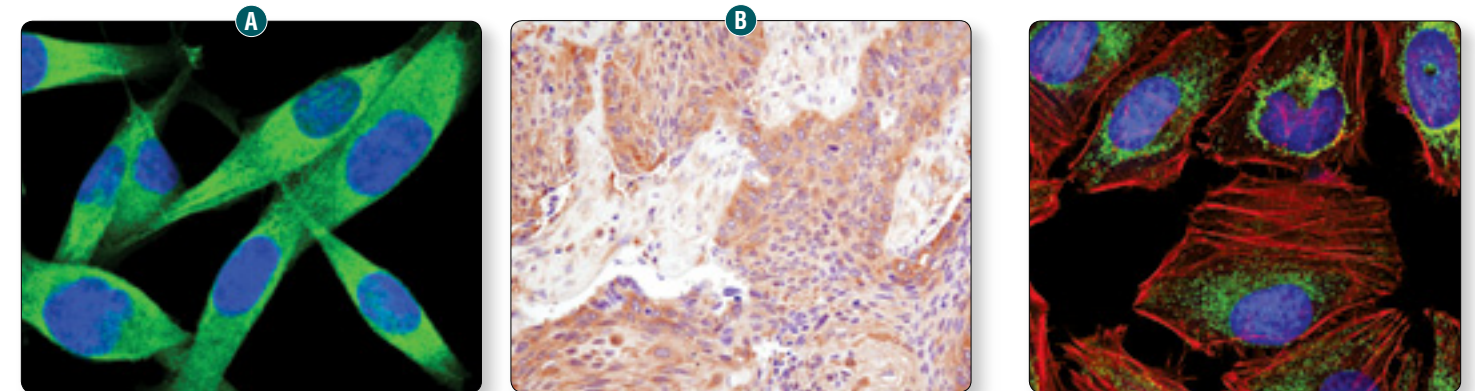
GSK-3α (D80D1) XP® Rabbit mAb #4818: Confocal IF analysis of MEF/GSK-3 wildtype cells (A), MEF/GSK-3β (-/-) cells (B), and MEF/GSK-3α (-/-) cells (C) using #4818 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye). (MEF/wildtype, GSK-3β (-/-), and GSK-3α (-/-) cells were kindly provided by Dr. Jim Woodgett, University of Toronto, Canada).

GAPDH

Glyceraldehyde-3-phosphate dehydrogenase (GAPDH) catalyzes the phosphorylation of glyceraldehyde-3-phosphate during glycolysis. Though differentially expressed from tissue to tissue, GAPDH is thought to be a constitutively expressed housekeeping protein. For this reason, GAPDH mRNA and protein levels are often measured as controls in experiments to quantify specific changes in expression of other targets. Recent work has elucidated roles for GAPDH in apoptosis, gene expression, and nuclear transport. GAPDH may also play a role in neurodegenerative pathologies such as Huntington's and Alzheimer's diseases.



GAPDH (D16H11) XP® Rabbit mAb #5174: IHC analysis of paraffin-embedded human breast carcinoma (A) using #5174. Confocal IF analysis of C2C12 cells (B) using #5174 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



PKM2 (D78A4) XP® Rabbit mAb #4053: Confocal IF analysis of A-204 cells (A) using #4053 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye). IHC analysis of paraffin-embedded human lung carcinoma (B) using #4053.

SDHA Antibody #5839: Confocal IF analysis of HeLa cells using #5839 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

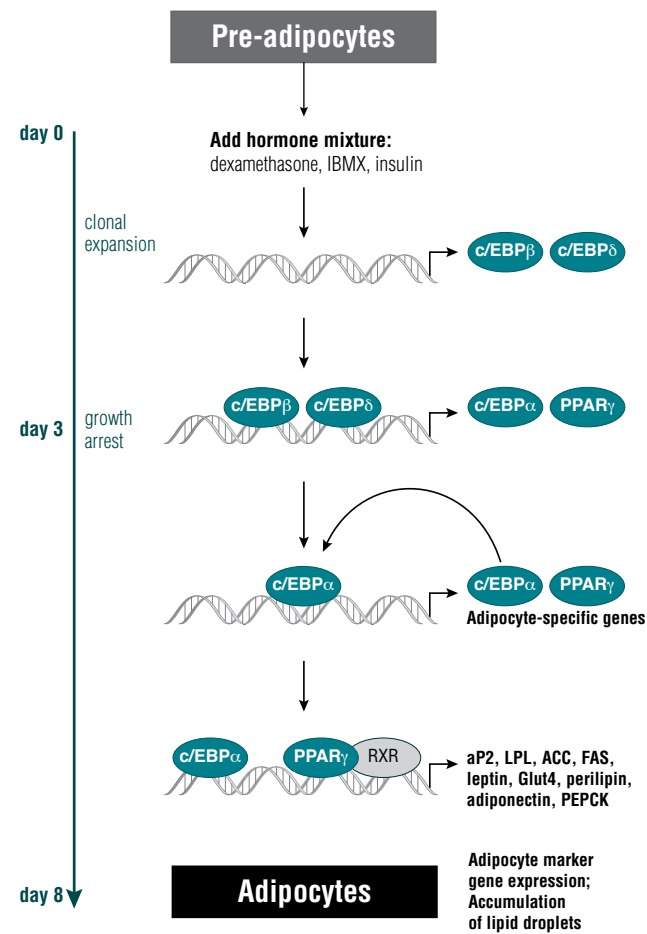
APPLICATIONS KEY:

W Western / IP Immunoprecipitation / IHC Immunohistochemistry / IF Immunofluorescence / F Flow Cytometry / ChIP Chromatin Immunoprecipitation / (-IC Immunocytochemistry, -P Paraffin, -F Frozen) / E-P Peptide ELISA

REACTIVITY KEY:

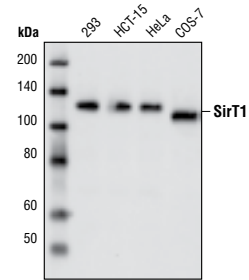
H human / M mouse / R rat / Hm hamster / Mk monkey / C chicken / Mi mink / Dm D. melanogaster / X Xenopus / Z zebra fish / B bovine / Dg dog / Pg pig / Sc S. cerevisiae / All all species expected / () 100% sequence homology

Lipid Metabolism



	Applications	Reactivity
#3658 AceCS1 (D19C6) Rabbit mAb	W, IP	H, M, R, Mk
#4047 ACSL1 Antibody	W, IHC-P	H, M, R
#2789 Adiponectin (C45B10) Rabbit mAb	W	M, R, (H)
#3207 AMACR (2A10) Mouse mAb	W, IP, IF-IC	H, M
NEW #3350 ApoA1 (5F) Mouse mAb	W, IP	H
NEW #3858 APPL1 (D83H4) XP® Rabbit mAb	W, IP, IF-IC	H, M, R, Mk
#3276 APPL1 Antibody	W	H, M, R
#2439 ATGL (30A4) Rabbit mAb	W, IP, IHC-P, IF-IC	M
#2138 ATGL Antibody	W, IP, IHC-P, IF-IC	M, (R)
#4331 Phospho-ATP-Citrate Lyase (Ser455) Antibody	W, IP	H, M, (R)
#4332 ATP-Citrate Lyase Antibody	W	H, M, R, Mk
#2841 Phospho-C/EBPα (Ser21) Antibody	W	H, M, (R, B)
#2844 Phospho-C/EBPα (Thr222/226) Antibody	W	H, M, (R)
#2295 C/EBPα Antibody	W, IF-IC	H, M, R
#2843 C/EBPα (p42) Antibody	W	H, (M, R)
#3081 Phospho-C/EBPβ (Ser105) Antibody (Rat Specific)	W	R
#3084 Phospho-C/EBPβ (Thr235) Antibody	W	H, M, (B, Pg)
#3082 C/EBPβ Antibody	W	R
#3087 C/EBPβ (LAP) Antibody	W	H, M, (R)
#2318 C/EBPδ Antibody	W	M, R
#2033 DHCR24/Seladin-1 (C59D8) Rabbit mAb	W, IP, IHC-P	H, M
#3829 FAAH1 (C84F1) Rabbit mAb	W, IP, IHC-P	M, R
NEW #9179 FAAH1 Antibody (Rat Specific)	W, IP	R
#2942 FAAH1 (L14B8) Mouse mAb	W, IP	H, M
#3544 FABP4 (D25B3) XP® Rabbit mAb	W, IP, IF-IC	M, (H)
#2120 FABP4 Antibody	W	M
#3180 Fatty Acid Synthase (C20G5) Rabbit mAb	W, IP, IHC-P, IHC-F, IF-IC	H, M, R, (B)
#3189 Fatty Acid Synthase Antibody	W	H, M
#4595 GATA-2 Antibody	W	H, M, R
#3113 HNF4α (C11F12) Rabbit mAb	W, IHC-P, IF-IC	H
NEW #3117 HNF4α (G162) Antibody	W	H
#4139 Phospho-HSL (Ser563) Antibody	W, IF-IC	M, (H, R)
#4137 Phospho-HSL (Ser565) Antibody	W, IF-IC	M, (H, R)
#4126 Phospho-HSL (Ser660) Antibody	W, IF-IC	M, R
#4107 HSL Antibody	W, IP, IF-IC	M, (H)
NEW #5195 Lipin 1 Antibody	W, IP, IF-IC	H, M
NEW #9349 Perilipin (D1D8) XP® Rabbit mAb	W, IP, IHC-P, IF-F, IF-IC	H, M
#3470 Perilipin (D418) Antibody	W, IHC-P, IF-IC	M, (H)
#3467 Perilipin (K117) Antibody	W, IF-IC	M, (H, Pg)
#2435 PPARγ (C26H12) Rabbit mAb	W, IHC-P, IF-IC	H, M, (R)
#2443 PPARγ (81B8) Rabbit mAb	W, IP, IF-IC	H, M, (R)
#2430 PPARγ (D69) Antibody	W, IP	H, M, (R)
#2794 SCD1 (C12H5) Rabbit mAb	W, IP, IHC-P, IF-IC	M
#2438 SCD1 (M38) Antibody	W, IF-IC	M, (H)
#2283 SCD1 (R347) Antibody	W, IF-IC	M, (H)
#2327 Phospho-SirT1 (Ser27) Antibody	W	H
#2314 Phospho-SirT1 (Ser47) Antibody	W, IP, IF-IC, F	H
NEW #3931 SirT1 (D60E1) Rabbit mAb (Mouse Specific)	W, IP	M
#2496 SirT1 (C14H4) Rabbit mAb	W, IP	H
#2310 SirT1 Antibody	W	H
#2028 SirT1 Antibody (Mouse Specific)	W, IP, IF-IC	M
#2493 SirT1 (D739) Antibody	W, IP, IF-IC	H, Mk
#2627 SirT3 (C73E3) Rabbit mAb	W, IP, IHC-P	H, R, Mk
NEW #5490 SirT3 (D22A3) Rabbit mAb	W, IP	H, M, R

Unparalleled Product Quality, Validation, and Technical Support



SirT1 (D739) Antibody #2493: WB analysis of extracts from various cell lines using #2493.

Application References:

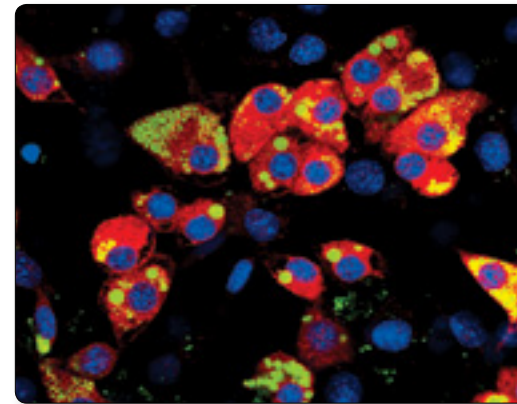
Phospho-ATP-Citrate Lyase (Ser454) Antibody #4331: Bauer, D.E. et al. (2005) *Oncogene* 24, 6314–6322. (W)

Phospho-C/EBPα (Ser21) Antibody #2841: Ross, S.E. et al. (2004) *Mol. Cell. Biol.* 24, 675–686. (W)

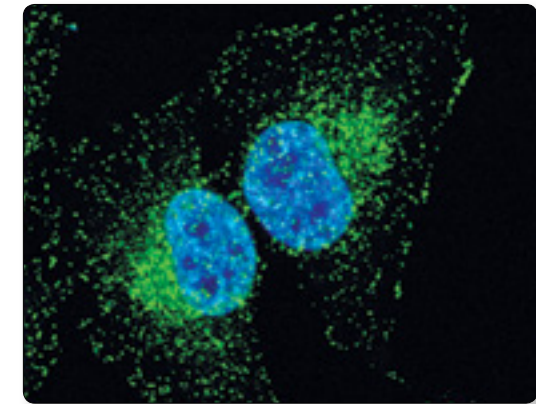
Phospho-C/EBPα (Thr222/226) Antibody #2844: Liu, H.K. et al. (2006) *BMC Mol. Biol.* 7, 14. (W)

Phospho-C/EBPβ (Thr235) Antibody #3084: Tang, Q. et al. (2005) *Proc. Natl. Acad. Sci. USA* 102, 9766–9771. (W) / Piwien-Pilipuk, G. et al. (2002) *J. Biol. Chem.* 277, 44557–44565. (W) / Park, B.H. et al. (2004) *Mol. Cell. Biol.* 24, 8671–8680. (W)

Phospho-C/EBPα (Ser21) Antibody #2841: Ross, S.E. et al. (2004) *Mol. Cell. Biol.* 24, 675–686. (W)



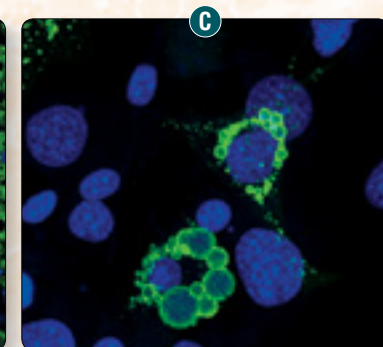
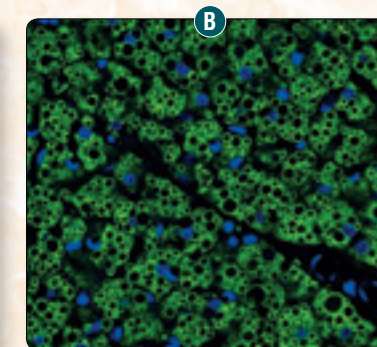
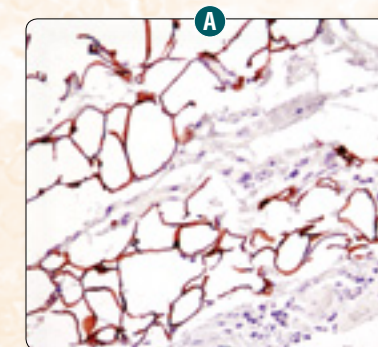
Lipin 1 Antibody #5195: Confocal IF analysis of 3T3-L1 adipocytes using #5195 (red). Lipid droplets were labeled with BODIPY® 493/503 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



APPL1 (D83H4) XP® Rabbit mAb #3858: Confocal IF analysis of HeLa cells using #3858 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

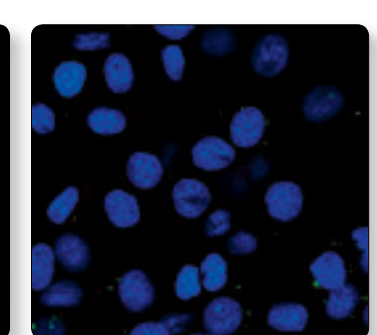
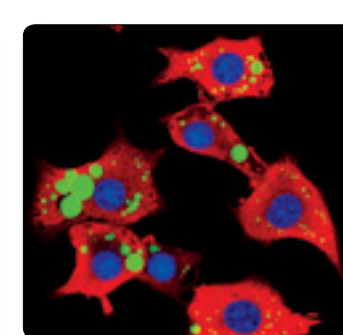
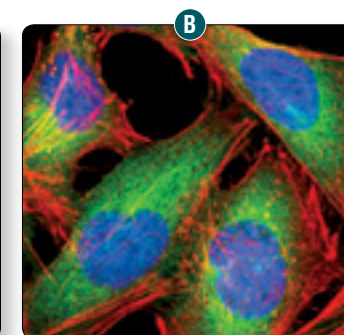
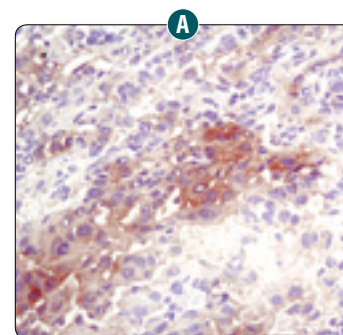
Perilipin

Triacylglycerol is stored in lipid droplets as a primary energy reserve. Perilipin is localized at the periphery of lipid droplets and serves as a protective coating against lipases. Evidence suggests that protein kinase A (PKA) regulates lipolysis by phosphorylating perilipin. Phosphorylation of perilipin results in the conformational change that exposes lipid droplets to endogenous lipases, such as hormone-sensitive lipases, making perilipin a pivotal player in lipid storage.



Perilipin (D1D8) XP® Rabbit mAb #9349: IHC analysis of paraffin-embedded breast carcinoma (A) using #9349. Note specific staining of adipocytes. Confocal IF analysis of frozen mouse brown adipose tissue (B) and 3T3-L1 adipocytes (C), using #9349 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

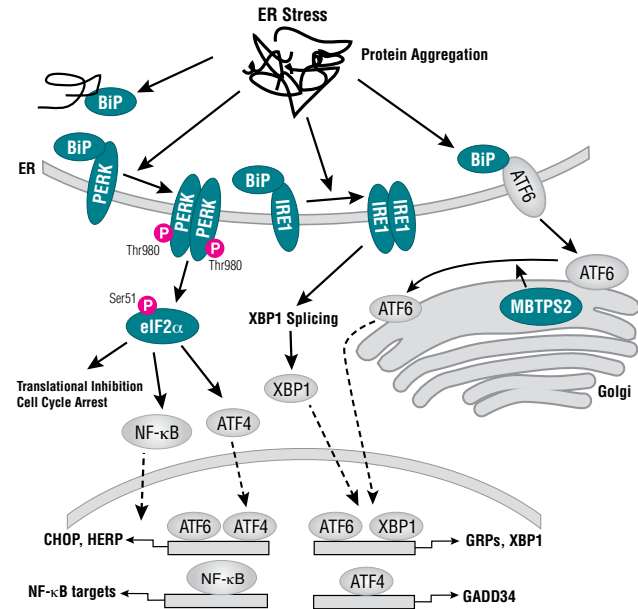
Unparalleled Product Quality, Validation, and Technical Support



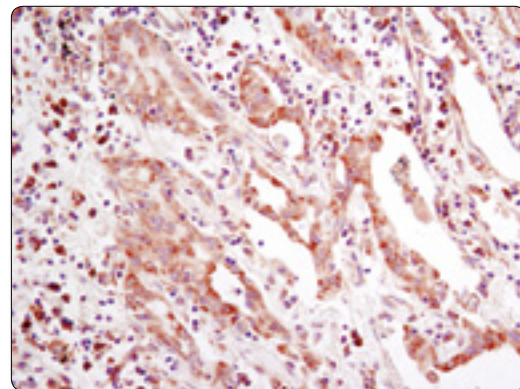
Fatty Acid Synthase (C20G5) Rabbit mAb #3180: IHC analysis of frozen SKOV-3 xenograft (A) using #3180. Confocal IF analysis of HeLa cells (B) using #3180 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

FABP4 (D25B3) XP® Rabbit mAb #3544: Confocal IF analysis of 3T3-L1 adipocytes (left) and 3T3-L1 pre-adipocytes (right), using #3544 (red). Lipid droplets were labeled with BODIPY® 493/503 (green). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

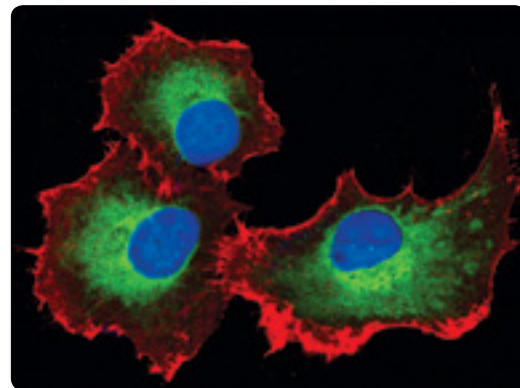
ER Stress



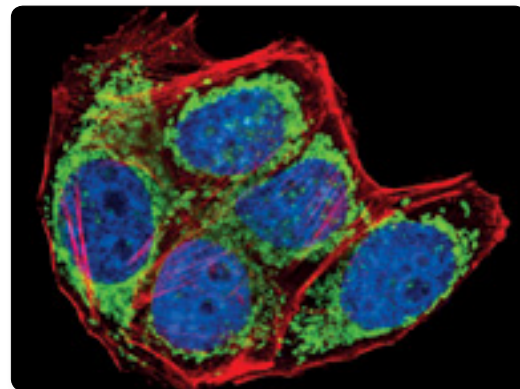
	Applications	Reactivity
#3177 BiP (C50B12) Rabbit mAb	W, IHC-P, IHC-F	H, M
#3183 BiP Antibody	W	H, M, R, Mk
#2679 Calnexin (C5C9) Rabbit mAb	W, IHC-P, IF-IC	H, Mk
#2433 Calnexin Antibody	W, IHC-P, IF-IC	H
#2891 Calreticulin Antibody	W, IF-IC	H, M, R, Mk
NEW #5554 CHOP (D46F1) Rabbit mAb	W, IP	M, (H, R)
#2895 CHOP (L63F7) Mouse mAb	W, IP, IF-IC	H, M, R
#3398 Phospho-eIF2α (Ser51) (D9G8) XP® Rabbit mAb	W, IP, IHC-P	H, M, R, Mk, Dm
#3597 Phospho-eIF2α (Ser51) (119A11) Rabbit mAb	W, IP, IHC-P	H, M, R, Mk, Dm
#9721 Phospho-eIF2α (Ser51) Antibody	W	H, M, R, Mk, Dm
NEW #5324 eIF2α (D7D3) XP® Rabbit mAb	W, IP, IHC-P	H, M, R, Mk
#9722 eIF2α Antibody	W	H, M, R, Mk
#2103 eIF2α (L57A5) Mouse mAb	W, IHC-P	H, M, R, Mk
#3595 eIF2B-ε Antibody	W	H, M, R, Mk
#3798 ERp44 (D17A6) XP® Rabbit mAb	W, IHC-P	H, M, R, Mk
#2886 ERp44 Antibody	W	H, M, R, Mk
#2887 ERp57 (A484) Antibody	W	H, M, R
#2881 ERp57 (G117) Antibody	W	H, M, R
NEW #5033 ERp72 (D70D12) XP® Rabbit mAb	W, IF-IC, F	H, M, R, Mk
#2798 ERp72 Antibody	W	H, M, R, Mk
#3264 Ero1-Lα Antibody	W	H
#3302 GCN2 Antibody	W, IP	H, M, R, Mk
#3593 Grp75 (D13H4) XP® Rabbit mAb	W, IP, IHC-P, IF-IC	H, M, Mk
#2816 Grp75 Antibody	W, IF-IC	H, M, R, Mk
#2104 Grp94 Antibody	W	H, M, R, Mk
#3294 IRE1α (14C10) Rabbit mAb	W, IP	H, M
#2157 MBTPS2 Antibody	W	M, (H, R)
#2940 p58IPK (C56E7) Rabbit mAb	W, IP	H, M, Mk
#3501 PDI (C81H6) Rabbit mAb	W, IP, IHC-P, IF-IC	H, M, R, Mk
#2446 PDI Antibody	W, IHC-P, IF-IC	H, M, R, Mk
#3179 Phospho-PERK (Thr980) (16F8) Rabbit mAb	W	R, (M)
#3192 PERK (C33E10) Rabbit mAb	W	H, M, R, Mk
#3072 PKR Antibody	W, IP, IF-IC	H
#2766 PKR (N216) Antibody	W	H



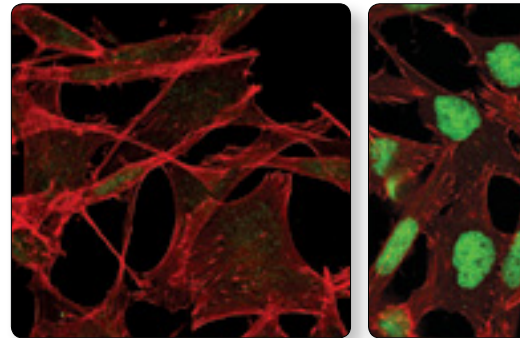
eIF2α (D7D3) XP® Rabbit mAb #5324: IHC analysis of paraffin-embedded human lung carcinoma using #5324.



ERp72 (D70D12) XP® Rabbit mAb #5033: Confocal IF analysis of PANC-1 cells using #5033 (green) and β-Actin (8H10D10) Mouse mAb #3700 (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



Grp75 (D13H4) XP® Rabbit mAb #3593: Confocal IF analysis of MCF7 cells using #3593 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



CHOP (L63F7) Mouse mAb #2895: Confocal IF analysis of A-204 cells, untreated (left) or tunicamycin-treated (right), using #2895 (green). Actin filaments were labeled with DY-554 phalloidin (red).

PathScan® Sandwich ELISA Kits and Antibody Pairs

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Our line of PathScan® Sandwich ELISA products provides researchers with a selection of assays for the study of critical regulatory proteins. In-house development, production, and validation of these kits ensure the highest possible product quality and support.

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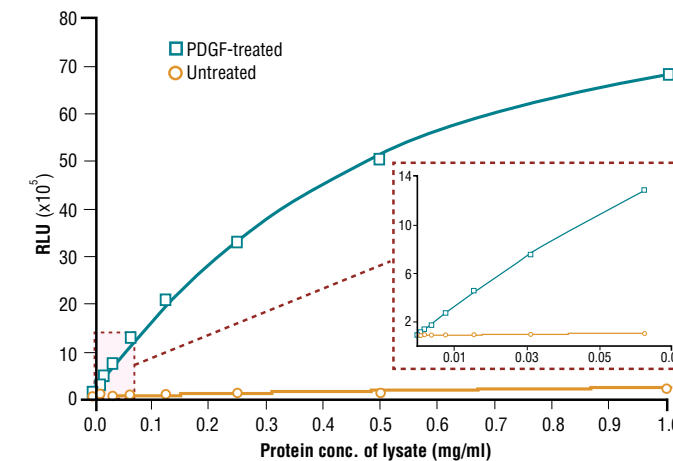
PathScan® Antibody Array Kits – are slide-based ELISA assays, designed to investigate signal transduction occurring through receptor tyrosine kinases and pathway key nodes in a multiplex format.

PathScan® Multi-Target ELISA Kits – examine several important and well-characterized signaling events in a single assay.

PathScan® ELISA Control Cell Extracts – provide the appropriate positive and negative controls, and also allow the standardization of signal obtained from different plates.

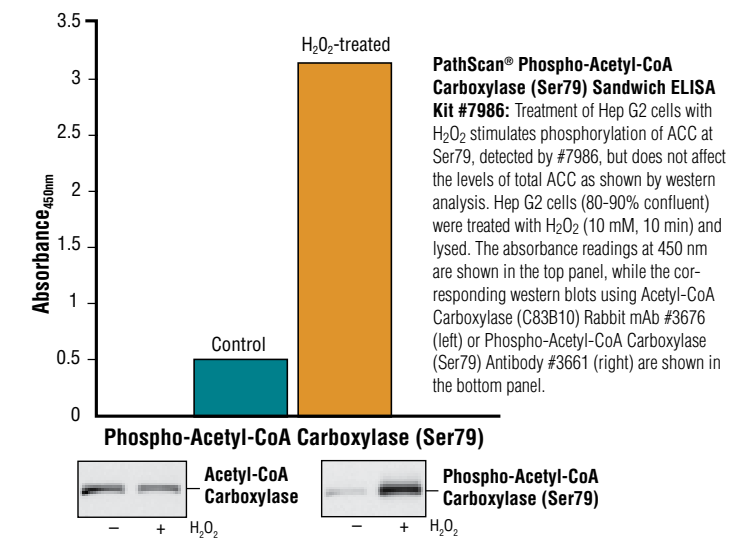
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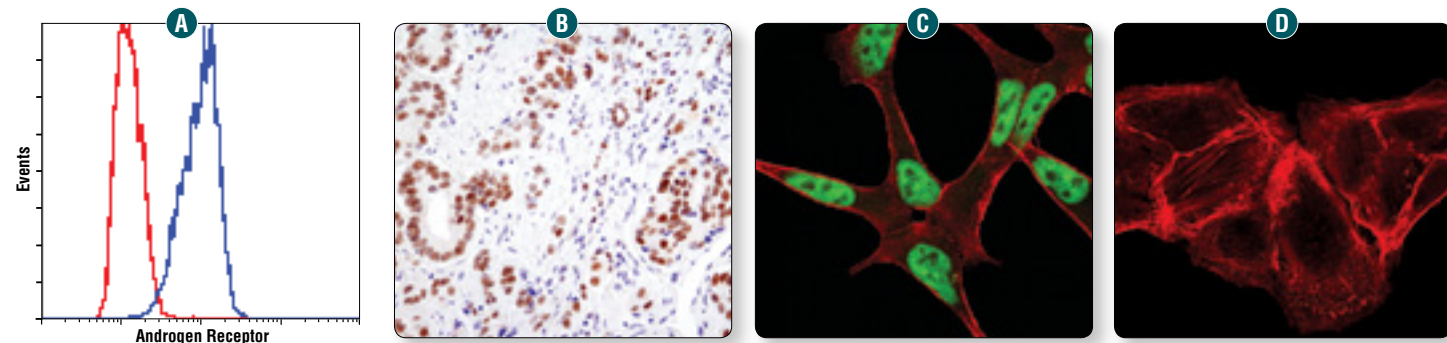
PathScan® Phospho-Akt1 (Ser473) Chemiluminescent Sandwich ELISA Kit #7134: Relationship between protein concentration of lysates from untreated and PDGF-treated NIH/3T3 cells and immediate light generation with chemiluminescent substrate is shown. Cells (80% confluence) were treated with PDGF (50 ng/ml) and lysed after incubation at 37°C for 20 minutes. Graph inset corresponding to the shaded area shows high sensitivity and a linear response at the low protein concentration range.

PathScan® Sandwich ELISA Kits	Antibody Pair
#7216 PathScan® Phospho-4E-BP1 (Thr37/Thr46) Sandwich ELISA Kit	#7854
#7179 PathScan® Total 4E-BP1 Sandwich ELISA Kit	-
NEW #7986 PathScan® Phospho-Acetyl-CoA Carboxylase (Ser79) Sandwich ELISA Kit	-
#7252 PathScan® Phospho-Akt (Thr308) Sandwich ELISA Kit	#7144
#7135 PathScan® Phospho-Akt (Thr308) Chemiluminescent Sandwich ELISA Kit	-
#7160 PathScan® Phospho-Akt1 (Ser473) Sandwich ELISA Kit	#7143
#7134 PathScan® Phospho-Akt1 (Ser473) Chemiluminescent Sandwich ELISA Kit	-
#7170 PathScan® Total Akt1 Sandwich ELISA Kit	#7142
#7132 PathScan® Total Akt1 Chemiluminescent Sandwich ELISA Kit	-
#7048 PathScan® Phospho-Akt2 (Ser474) Sandwich ELISA Kit	-
#7932 PathScan® Phospho-Akt2 (Ser474) Sandwich ELISA Kit (Mouse Preferred)	-
#7046 PathScan® Total Akt2 Sandwich ELISA Kit	-
#7930 PathScan® Total Akt2 Sandwich ELISA Kit (Mouse Preferred)	-
#7942 PathScan® Phospho-Akt3 (Ser472) Sandwich ELISA Kit (Mouse Preferred)	-
#7934 PathScan® Total Akt3 Sandwich ELISA Kit (Mouse Preferred)	-
NEW #7959 PathScan® Phospho-AMPKα (Thr172) Sandwich ELISA Kit	#7955
#7302 PathScan® Phospho-IGF-1 Receptor β (Tyr1131) Sandwich ELISA Kit	#7820
#7254 PathScan® Phospho-Insulin Receptor β (Tyr1146) Sandwich ELISA Kit	#7827
#7258 PathScan® Phospho-Insulin Receptor β (Tyr1150/1151) Sandwich ELISA Kit	#7828
#7326 PathScan® Phospho-Insulin Receptor β (Tyr1345) Sandwich ELISA Kit	#7823
#7133 PathScan® Phospho-IRS-1 (panTyr) Sandwich ELISA Kit	#7347
#7283 PathScan® Phospho-IRS-1 (Ser302) Sandwich ELISA Kit	#7284
#7287 PathScan® Phospho-IRS-1 (Ser307) Sandwich ELISA Kit	-
#7332 PathScan® Phospho-IRS-1 (Ser612) Sandwich ELISA Kit	-
#7328 PathScan® Total IRS-1 Sandwich ELISA Kit	-
#7860 PathScan® Phospho-IRS-2 (panTyr) Sandwich ELISA Kit	#7861
#7884 PathScan® Total IRS-2 Sandwich ELISA Kit	#7885
#7285 PathScan® Phospho-PTEN (Ser380) Sandwich ELISA Kit	-
#7882 PathScan® Total PTEN Sandwich ELISA Kit	#7883
#7205 PathScan® Phospho-S6 Ribosomal Protein (Ser235/236) Sandwich ELISA Kit	#7201
#7225 PathScan® Total S6 Ribosomal Protein Sandwich ELISA Kit	#7203



PathScan® Phospho-Acetyl-CoA Carboxylase (Ser79) Sandwich ELISA Kit #7986: Treatment of Hep G2 cells with H₂O₂ stimulates phosphorylation of ACC at Ser79, detected by #7986, but does not affect the levels of total ACC as shown by western analysis. Hep G2 cells (80-90% confluent) were treated with H₂O₂ (10 mM, 10 min) and lysed. The absorbance readings at 450 nm are shown in the top panel, while the corresponding western blots using Acetyl-CoA Carboxylase (C83B10) Rabbit mAb #3676 (left) or Phospho-Acetyl-CoA Carboxylase (Ser79) Antibody #3661 (right) are shown in the bottom panel.

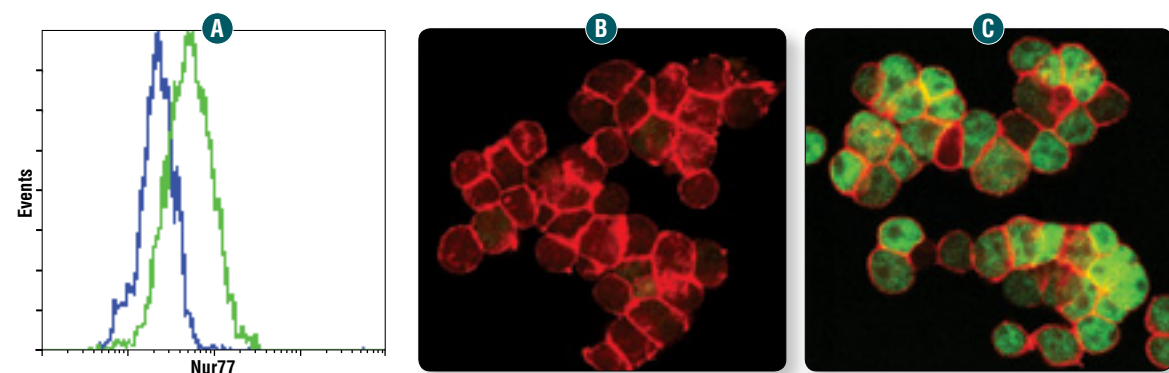
Hormone/Nuclear Receptors



Androgen Receptor (D6F11) XP[®] Rabbit mAb #5153: Flow cytometric analysis of DU 145 (red) and LNCaP (blue) cells (A) using #5153. IHC analysis of paraffin-embedded human prostate carcinoma (B) using #5153. Confocal IF analysis of LNCaP (C) and DU 145 (D) cells using #5153 (green). Actin filaments were labeled with DY-554 phalloidin (red).

Unparalleled Product Quality, Validation, and Technical Support

	Applications	Reactivity
NEW #5153 Androgen Receptor (D6F11) XP[®] Rabbit mAb	W, IHC-P, IF-IC, F	H
#3202 Androgen Receptor Antibody	W	H
#2517 Phospho-Estrogen Receptor α (Ser104/106) Antibody	W	H, (M)
#2511 Phospho-Estrogen Receptor α (Ser118) (16J4) Mouse mAb	W, IHC-P	H
NEW #5587 Phospho-Estrogen Receptor α (Ser167) (D1A3) Rabbit mAb	W	H, (Mk)
#2512 Estrogen Receptor α (62A3) Mouse mAb	W	H
NEW #5513 Estrogen Receptor β Antibody	W	H, M, R, Mk
#4161 Phospho-Glucocorticoid Receptor (Ser211) Antibody	W, IP, IF-IC	H, (M)
NEW #7437 Glucocorticoid Receptor Antibody	W, IP	H, R
NEW #5095 Phospho-Nur77 (Ser351) (D22G5) Rabbit mAb	W	H, (M, R)
NEW #3960 Nur77 (D63C5) XP[®] Rabbit mAb	W, IP, IF-IC, F	H, (Mk)
#3171 Phospho-Progesterone Receptor (Ser190) Antibody	W, IP	H
#2435 PPARγ (C26H12) Rabbit mAb	W, IHC-P, IF-IC	H, M, (R)
#2443 PPARγ (81B8) Rabbit mAb	W, IP, IF-IC	H, M, (R)



Nur77 (D63C5) XP[®] Rabbit mAb #3960: Flow cytometric analysis of Jurkat cells (A), untreated (green) or treated with TPA #4174 and A23187 (blue), using #3960. Confocal IF analysis of Jurkat cells, untreated (B) or treated with TPA #4174 and A23187 (C), using #3960 (green). Actin filaments were labeled with DY-554 phalloidin (red).

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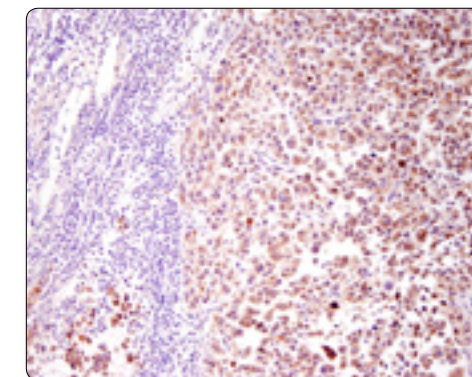
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Other Proteins

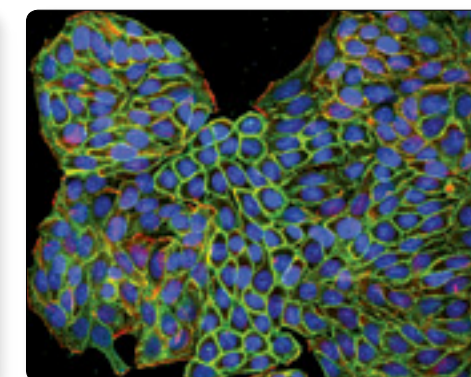
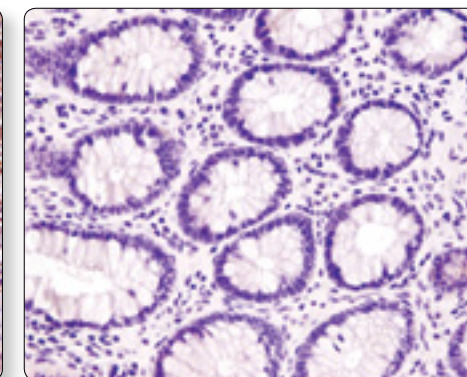
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	Applications	Reactivity
#4477 ABCG2 Antibody	W	H, M, R, (Mk, X, B, Dg)
NEW #6922 ACO2 Antibody	W, IF-IC	H, M, R, Mk
NEW #5295 ADH1 Antibody	W	H, M
#3487 AQP2 Antibody	W	H, M, R, Mk
NEW #5100 ASCT2 (G11) Antibody	W, IP	H, M, R, Mk
NEW #5345 ASCT2 (V501) Antibody	W, IP, IF-IC, F	H, M, R
NEW #5648 CA9 (D10C10) Rabbit mAb	W	H
NEW #5649 CA9 (D47G3) Rabbit mAb	W, IP	H
NEW #5864 CA12 (D75C6) XP[®] Rabbit mAb	W, IP, F	H

	Applications	Reactivity
NEW #5865 CA12 (D78E4) Rabbit mAb	W, IP	H, M, R
NEW #6931 CCTα (D18B6) Rabbit mAb	W, IP	H, M, R, Mk
#4454 CCTα Antibody	W, IP	H
#3998 FTH1 Antibody	W	H, M, R, Mk
NEW #5347 LAT1 Antibody	W, IP	H
#4446 MRP2 (R260) Antibody	W, IP, IF-IC	H
#4158 MTAP Antibody	W, IP	H, M, R, Mk
NEW #9319 Tyrosinase (T311) Mouse mAb (IHC Specific)	IHC-P	H



Tyrosinase (T311) Mouse mAb (IHC Specific) #9319: IHC analysis of human melanoma (left) and human colon tissue (right) using #9319. Note the lack of staining in the tyrosinase negative colon tissue.

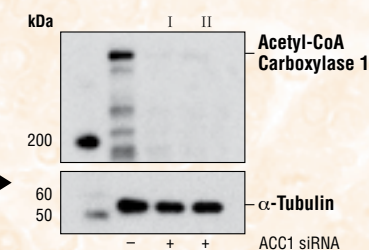


ASCT2 (V501) Antibody #5345: Confocal IF analysis of HT-29 cells using #5345 (green). Actin filaments were labeled with DY-554 phalloidin (red). Blue pseudocolor = DRAQ5[®] #4084 (fluorescent DNA dye).

SignalSilence[®] siRNA

SignalSilence[®] siRNA reagents from Cell Signaling Technology allow the researcher to specifically inhibit protein expression. These products utilize RNA interference, a method in which gene expression can be selectively silenced through the delivery of double stranded RNA molecules into the cell. siRNA targeting either mouse or human proteins are available for many targets, and two equally potent siRNAs are available for most targets. In addition, a fluorescein-labeled non-targeted siRNA control #6201 allows the user to monitor transfection efficiency, while an unconjugated control siRNA #6568 can be used to control for specificity.

SignalSilence[®] Acetyl-CoA Carboxylase 1 (Mouse Specific) siRNA I #6397 and siRNA II #6398: WB analysis of extracts from NIH/3T3 cells, transfected with 100 nM SignalSilence[®] Control siRNA (Unconjugated) #6568 (-), #6397 (+) or #6398 (+), using Acetyl-CoA Carboxylase 1 Antibody #4190 (upper) or α -Tubulin (11H10) Rabbit mAb #2125 (lower). The Acetyl-CoA Carboxylase 1 Antibody confirms silencing of Acetyl-CoA Carboxylase 1 expression, while the α -Tubulin (11H10) Rabbit mAb is used as a loading control.

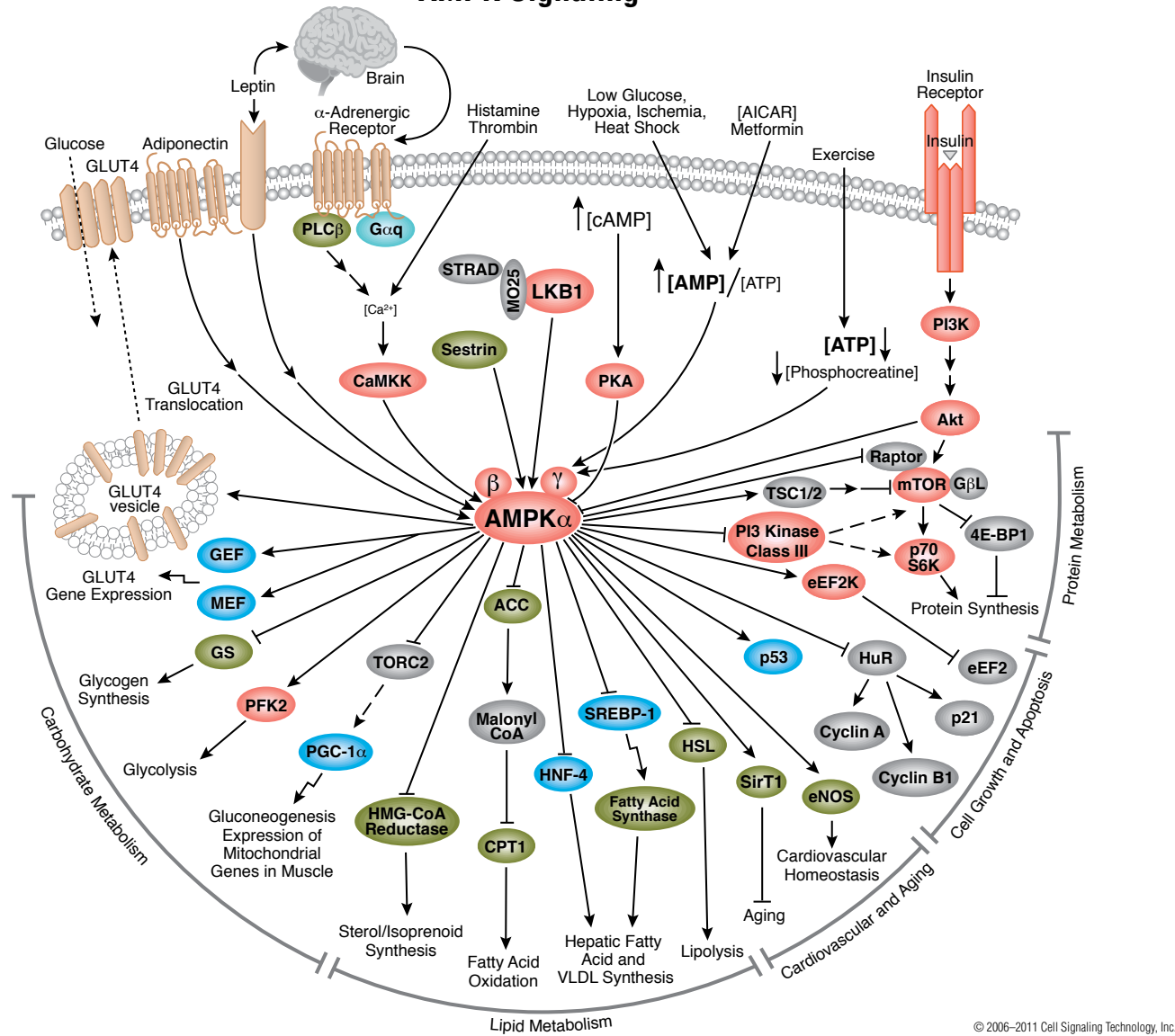


Targets	I	II	Targets	I	II	Targets	I	II
Acetyl-CoA Carboxylase 1 NEW	#6224	#6237	Atg7	#6604	-	LC3A	#6214	#6215
Acetyl-CoA Carboxylase 1 (mouse) NEW	#6397	#6398	Atg14	#6286	#6287	LC3A (mouse) NEW	#6214	-
Akt	#6211	#6510	Beclin-1	#6222	#6246	LC3B	#6212	#6213
Akt1 (mouse) NEW	#6909	-	FoxO1	#6242	#6256	MTAP NEW	#6284	#6285
Akt2	#6396	-	FoxO3a	#6302	#6303	mTOR	#6381	#6556
Akt2 (mouse) NEW	#6407	#6408	GSK-3α	#6312	#6524	mTOR (mouse) NEW	#6332	#6342
AMPKα2	#6620	#6630	GSK-3α (mouse) NEW	#6333	#6335	PI3K p110α NEW	#6359	-
Atg4B	#6336	-	GSK-3α/β	#6301	-	PTEN	#6251	#6538
Atg4C	#6325	-	GSK-3β (mouse) NEW	#6993	-	Tuberin/TSC2 NEW	#6476	#6548
Atg5	#6345	-	IGF-I Receptor NEW	#6610	-			

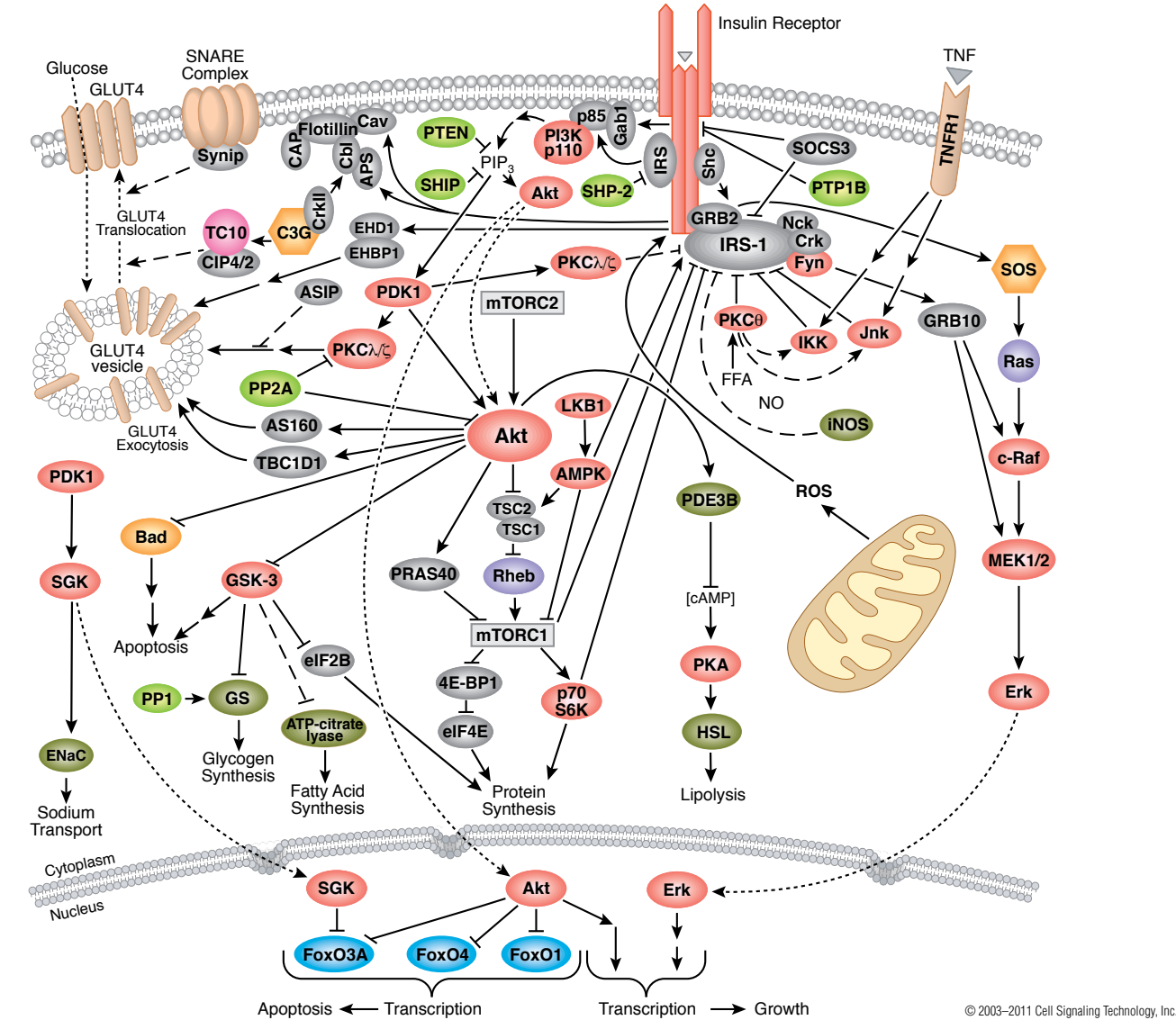
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Signaling Pathways

AMPK Signaling



Insulin Receptor Signaling



Pathway Description: AMP-activated protein kinase (AMPK) plays a key role as a master regulator of cellular energy homeostasis. The kinase is activated in response to stresses that deplete cellular ATP supplies such as low glucose, hypoxia, ischemia, and heat shock. It exists as a heterotrimeric complex composed of a catalytic α subunit and regulatory β and γ subunits. Binding of AMP to the γ subunit allosterically activates the complex, making it a more attractive substrate for its major upstream AMPK kinase, LKB1. Several studies indicate that signaling through adiponectin, leptin and CaMKK β may also be important in activating AMPK.

As a cellular energy sensor responding to low ATP levels, AMPK activation positively regulates signaling pathways that replenish cellular ATP supplies. For example, activation of AMPK enhances both the transcription and translocation of GLUT4, resulting in an increase in insulin-stimulated glucose uptake. In addition, it also stimulates catabolic processes such as fatty acid oxidation and glycolysis via inhibition of ACC and activation of PFK2. AMPK negatively regulates several proteins central to ATP consuming processes such as TORC2, glycogen synthase, SREBP-1 and TSC2, resulting in the downregulation or inhibition of gluconeogenesis, glycogen, lipid and protein synthesis. Due to its role as a central regulator of

both lipid and glucose metabolism, AMPK is considered to be a key therapeutic target for the treatment of obesity, type II diabetes mellitus, and cancer. AMPK is now also recognized as a critical modulator of aging through its interactions with mTOR, SirT1 and the sestrins.

Selected Reviews:
 Hardie, D.G. (2008) Role of AMP-activated protein kinase in the metabolic syndrome and in heart disease. *FEBS Lett.* 582, 81–89.
 Jorgensen, S.B. and Rose, A.J. (2008) How is AMPK activity regulated in skeletal muscles during exercise? *Front Biosci.* 13, 5589–5604.
 Steinberg, G.R. and Kemp, B.E. (2009) AMPK in health and disease. *Physiol. Rev.* 89, 1025–1078.
 Towler, M.C. and Hardie, D.G. (2007) AMP-activated protein kinase in metabolic control and insulin signaling. *Circ. Res.* 100, 328–341.
 Zhang, B.B., et al. (2009) AMPK: An Emerging Drug Target for Diabetes and the Metabolic Syndrome. *Cell Metab.* 9, 407–416.

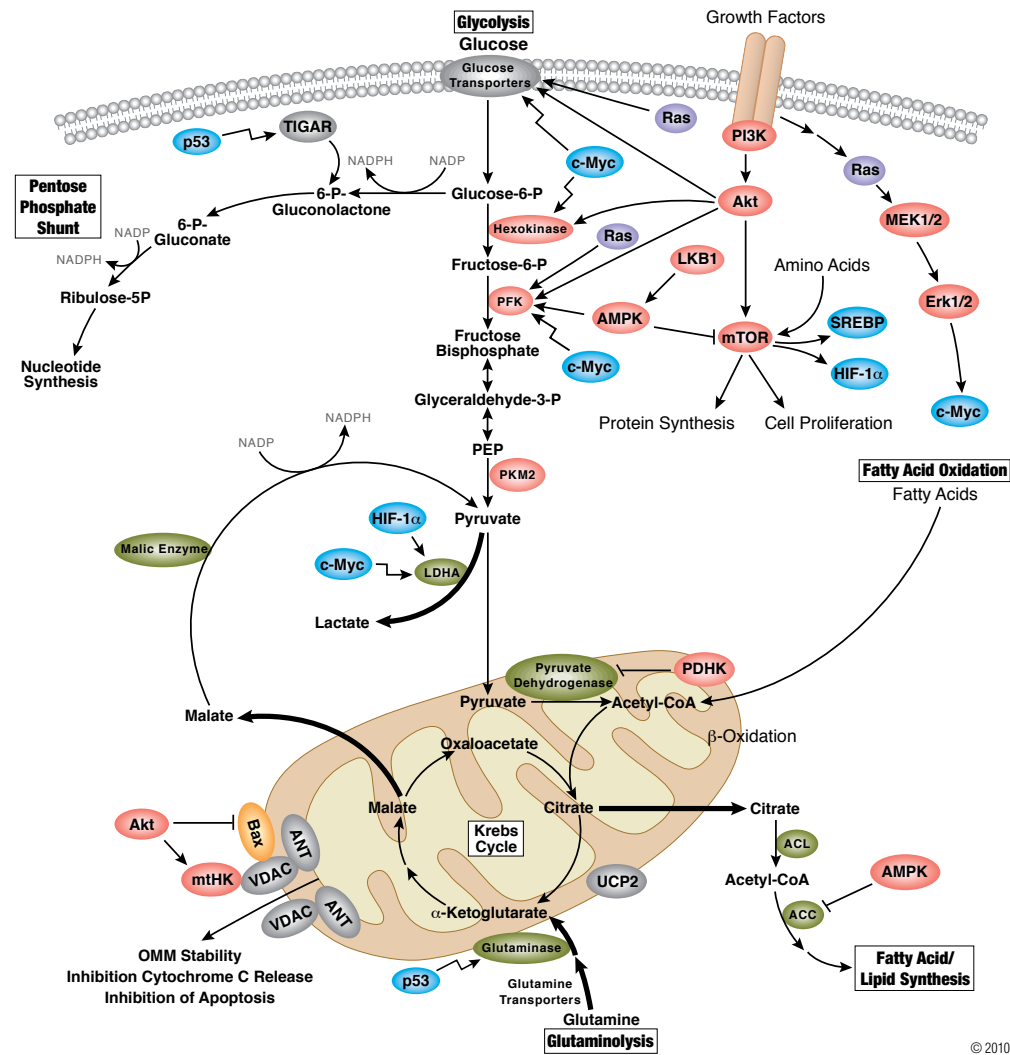
Pathway Description: Insulin is the major hormone controlling critical energy functions such as glucose and lipid metabolism. Insulin activates the insulin receptor tyrosine kinase (IR), which phosphorylates and recruits different substrate adaptors such as the IRS family of proteins. Tyrosine phosphorylated IRS then displays binding sites for numerous signaling partners. Among them, PI3K has a major role in insulin function, mainly via the activation of the Akt/PKB and the PKC ζ cascades. Activated Akt induces glycogen synthesis, through inhibition of GSK-3; protein synthesis via mTOR and downstream elements; and cell survival, through inhibition of several pro-apoptotic agents (Bad, Forkhead family transcription factors, GSK-3). Insulin stimulates glucose uptake in muscle and adipocytes via translocation of GLUT4 vesicles to the plasma membrane. GLUT4 translocation involves the PI3K/Akt pathway and IR mediated phosphorylation of CAP, and formation of the CAP:Cbl:CrkII complex. Insulin signaling also has growth and mitogenic effects, which are mostly mediated by the Akt cascade as well as by activation of the Ras/MAPK pathway. A negative feedback signal emanating from Akt/PKB, PKC ζ , p70 S6K and the MAPK cascades results in serine phosphorylation and inactivation of IRS signaling.

Selected Reviews:
 Bertrand, L. et al. (2008) Insulin signalling in the heart. *Cardiovasc. Res.* 79, 238–248.
 Brozinick, J.T. Jr. et al. (2007) "Actin" g on GLUT4: membrane & cytoskeletal components of insulin action. *Curr. Diabetes Rev.* 3, 111–122.
 Cheng, Z. et al. (2010) Insulin signaling meets mitochondria in metabolism. *Trends Endocrinol. Metab.* Jul 15, PMID: 20638297.
 Fritsche, L. et al. (2008) How insulin receptor substrate proteins regulate the metabolic capacity of the liver—implications for health and disease. *Curr. Med. Chem.* 15, 1316–1329.
 Tremblay, M.L. and Giguère, V. (2008) Phosphatases at the heart of FoxO metabolic control. *Cell Metab.* 7, 101–103.
 Zaid, H. et al. (2008) Insulin action on glucose transporters through molecular switches, tracks and tethers. *Biochem J.* 413, 201–215.



Signaling Pathways, cont.

Warburg Effect



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Pathway Description: Most cells use glucose as a fuel source. Glucose is metabolized by glycolysis in a multi-step set of reactions resulting in the creation of pyruvate. In typical cells, much of this pyruvate enters the mitochondria where it is oxidized by the Krebs Cycle to generate ATP to meet the cell's energy demands. However, in cancer cells or other highly proliferative cell types, much of the pyruvate from glycolysis is directed away from the mitochondria to create lactate through the action of the enzyme lactate dehydrogenase (LDH). Lactate production is typically restricted to anaerobic conditions when oxygen levels are low, however, cancer cells preferentially channel glucose towards lactate production even when oxygen is plentiful, a process termed "aerobic glycolysis" or the Warburg Effect.

Cancer cells frequently use glutamine as a secondary fuel source, which enters the mitochondria and can be used to replenish Krebs Cycle intermediates or can be used to produce more pyruvate through the action of malic enzyme. Highly proliferative cells need to produce excess lipid, nucleotide, and amino acids for the creation of new biomass. Excess glucose is diverted through the pentose phosphate shunt (PPS) to create nucleotides. Fatty acids are critical for new membrane production and are synthesized from citrate in the cytosol through the action of ATP-citrate lyase (ACL) to generate acetyl-CoA. This process requires NADPH reducing equivalents, which can be generated through the actions of malic enzyme and also from multiple steps within the PPS pathway.

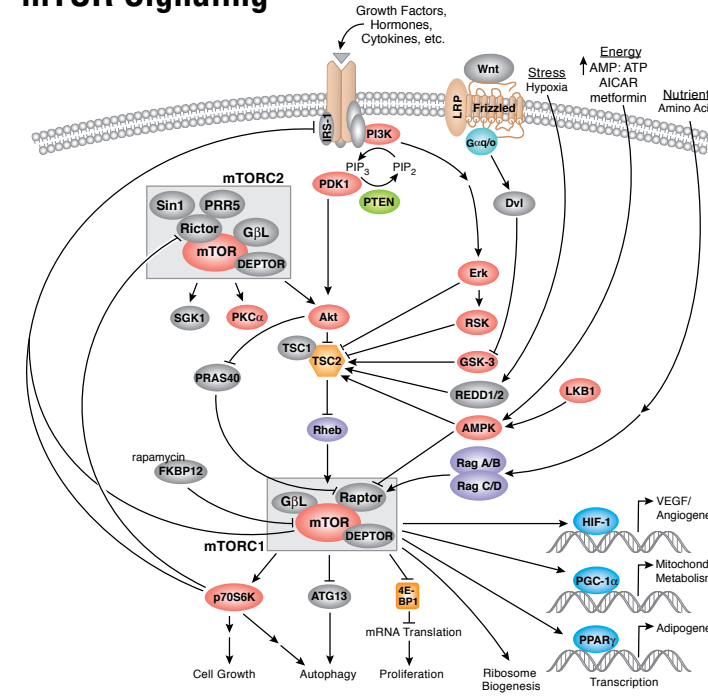
Several signaling pathways contribute to the Warburg Effect. Growth factor stimulation results in signaling through RTKs to activate PI3K/Akt and Ras. Akt promotes glucose transporter activity and stimulates glycolysis through activation of several glycolytic enzymes including hexokinase and phosphofruktokinase (PFK). Akt phosphorylation of apoptotic proteins such as Bax makes cancer cells resistant to apoptosis and helps stabilize the outer mitochondrial membrane (OMM) by promoting attachment of mitochondrial hexokinase (mHK) to the VDAC channel complex. RTK signaling to c-Myc results in transcriptional activation of numerous genes involved in glycolysis and lactate production. The p53 oncogene transactivates TP-53-induced Glycolysis and Apoptosis Regulator (TIGAR) and results in increased NADPH production by PPS.

Selected Reviews:

- Gogvadze, V. et al. (2010) The Warburg effect and mitochondrial stability in cancer cells. *Mol. Aspects Med.* 31, 60–74.
- Dang, C.V. et al. (2009) MYC-Induced Cancer Cell Energy Metabolism and Therapeutic Opportunities. *Clin. Cancer Res.* 15, 6479–6482.
- Samudio, I. et al. (2009) Mitochondrial Uncoupling and the Warburg Effect: Molecular Basis for the Reprogramming of Cancer Cell Metabolism. *Cancer Res.* 69, 2163–2166.
- Vander Heiden, M.G. et al. (2009) Understanding the Warburg Effect: The Metabolic Requirements of Cell Proliferation. *Science* 324, 1029–1033.

We would like to thank Prof. Matthew G. Vander Heiden, Massachusetts Institute of Technology, Cambridge, Massachusetts and Jason Locasale, postdoctoral fellow working with Lewis Cantley, Harvard Medical School, Boston, Massachusetts, for reviewing this diagram.

mTOR Signaling



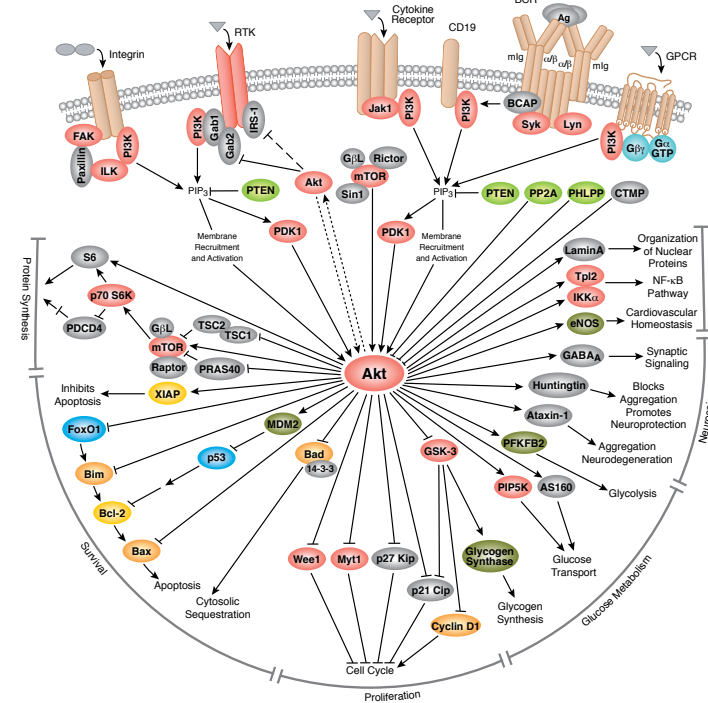
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Pathway Description: The mammalian target of rapamycin (mTOR) is an atypical serine/threonine kinase that is present in two distinct complexes. mTOR complex 1 (mTORC1) is composed of mTOR, Raptor, GβL (mLST8), and Deptor and is partially inhibited by rapamycin. mTORC1 integrates multiple signals reflecting the availability of growth factors, nutrients, or energy to promote either cellular growth when conditions are favorable or catabolic processes during stress or when conditions are unfavorable. Growth factors and hormones (e.g. insulin) signal to mTORC1 via Akt, which inactivates TSC2 to prevent inhibition of mTORC1. Alternatively, low ATP levels lead to the AMPK-dependent activation of TSC2 to reduce mTORC1 signaling. Amino acid availability is signaled to mTORC1 via a pathway involving the Rag proteins. Active mTORC1 has a number of downstream biological effects including translation of mRNA via the phosphorylation of downstream targets (4E-BP1 and p70 S6 Kinase), suppression of autophagy, ribosome biogenesis, and activation of transcription leading to mitochondrial metabolism or adipogenesis. The mTOR complex 2 (mTORC2) is composed of mTOR, Rictor, GβL, Sin1, PRR5/Protor-1, and Deptor and promotes cellular survival by activating Akt. mTORC2 also regulates cytoskeletal dynamics by activating PKCα and regulates ion transport and growth via SGK1 phosphorylation. Aberrant mTOR signaling is involved in many disease states including cancer, cardiovascular disease, and metabolic disorders.

Selected Reviews:

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PI3K/Akt Signaling



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Pathway Description: Since its initial discovery as a proto-oncogene, the serine/threonine kinase Akt (also known as protein kinase B or PKB) has become a major focus of attention because of its critical regulatory role in diverse cellular processes, including cancer progression and insulin metabolism. The Akt cascade is activated by receptor tyrosine kinases, integrins, B and T cell receptors, cytokine receptors, G protein coupled receptors and other stimuli that induce the production of phosphatidylinositol 3,4,5 triphosphates (PtdIns(3,4,5)P3) by phosphoinositide 3-kinase (PI3K). These lipids serve as plasma membrane docking sites for proteins that harbor pleckstrin-homology (PH) domains, including Akt and its upstream activator PDK1. There are three highly related isoforms of Akt (Akt1, Akt2, and Akt3) and these represent the major signaling arm of PI3K. For example, Akt is important for insulin signaling and glucose metabolism, with genetic studies in mice revealing a central role for Akt2 in these processes. Akt regulates cell growth through its effects on the mTOR and p70 S6 kinase pathways, as well as cell cycle and cell proliferation through its direct action on the CDK inhibitors p21 and p27, and its indirect effect on the levels of cyclin D1 and p53. Akt is a major mediator of cell survival through direct inhibition of pro-apoptotic signals such as Bad and the Forkhead family of transcription factors. T lymphocyte trafficking to lymphoid tissues is controlled by the expression of adhesion factors downstream of Akt. In addition, Akt has been shown to regulate proteins involved in neuronal function including GABA receptor, ataxin-1, and huntingtin proteins. Akt has been demonstrated to interact with Smad molecules to regulate TGFβ signaling. Finally, lamin A phosphorylation by Akt could play a role in the structural organization of nuclear proteins. These findings make Akt/PKB an important therapeutic target for the treatment of cancer, diabetes, laminopathies, stroke and neurodegenerative disease.

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USA Headquarters

Cell Signaling Technology, Inc.

Tel: 978-867-2300
E-mail: info@cellsignal.com
www.cellsignal.com

International Subsidiaries

Cell Signaling Technology (China) Limited

Tel: (86) 21-5835-6288
E-mail: info@cst-c.com.cn
www.cellsignal.com

Cell Signaling Technology Europe

Tel: +31 (0)71 568 1060
E-mail: info@cellsignal.eu
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Tel: (5982) 7074318 / E-mail: buro@st.com.uy

VENEZUELA: Bioproducts, Inc. DBA Corporacion Internacional De Tecnologia, S.a. (Corpointer)

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