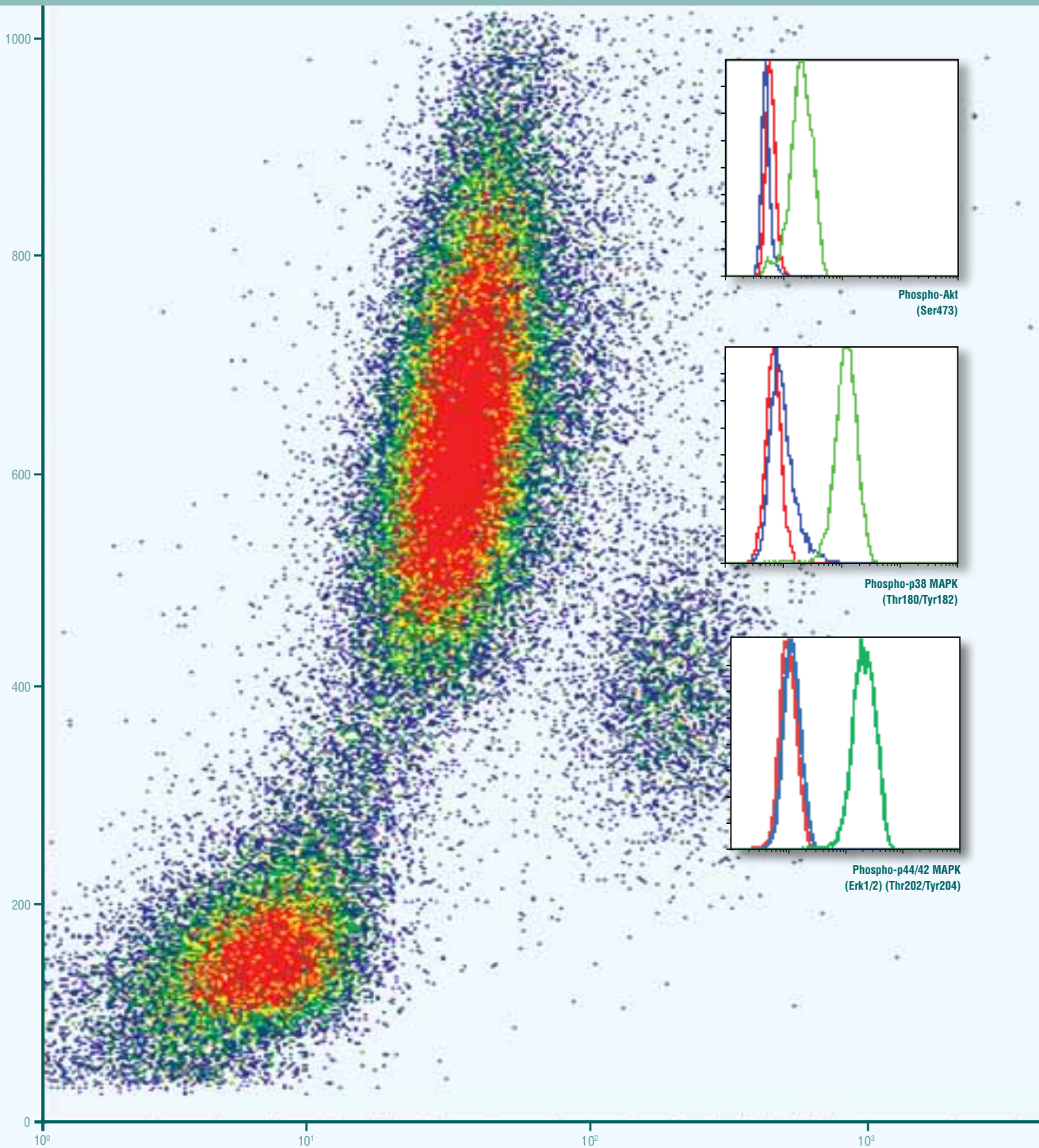




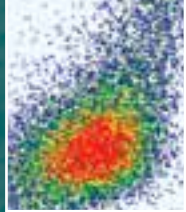
ANTIBODIES AND REAGENTS FOR FLOW CYTOMETRY

Unparalleled Product Quality, Validation, and Technical Support



Cell Signaling

TECHNOLOGY®



Cover Image:
#4284 Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate)

Antibodies and Reagents for Flow Cytometry

Cell Signaling Technology (CST) provides the highest quality activation state and total protein antibodies available for use in Flow Cytometry. Our in-house Flow Cytometry Group has validated each Flow Cytometry recommended CST™ antibody using multiple approaches. Technical support is provided by the same scientists who validate the products.

- 4 Conjugated Antibodies
- 6 **XP™ Monoclonal Antibodies**
- 7 Immunology and Inflammation
- 10 Recombinant Cytokines and Growth Factors
- 12 Cell Cycle, Checkpoint Control, and DNA Damage
- 14 Chromatin and Epigenetic Regulation
- 15 Tyrosine Kinases
- 16 Stem Cell Markers, Development, and Differentiation
- 18 MAP Kinase Signaling
- 20 Translational Control
- 22 PI3 Kinase/Akt Signaling
- 23 Protein Folding and Stability
- 24 Apoptosis and Autophagy
- 26 Cytoskeletal Regulation and Adhesion
- 28 Other Antibodies
- 29 Complementary Reagents
- 31 Flow Cytometry Protocols

XP™ Monoclonal Antibodies

CST has developed a proprietary monoclonal method, XMT® technology, which allows for the production of XP™ monoclonal antibodies with the exceptional specificity, sensitivity, and reproducibility needed for the most accurate results for flow cytometry.

See page 6 for more information.

Application 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

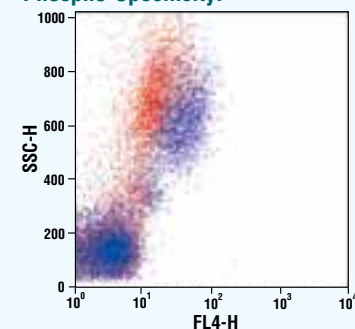
The products presented in this brochure are intended for research purposes only. These products are not intended to be used for therapeutic or diagnostic purposes in humans or animals.

Antibody Validation for Flow Cytometry

CST™ antibodies have undergone rigorous validation by our in-house Flow Cytometry Group. Our goal is to provide our customers with the most specific antibodies, brightest signal, and lowest background possible.

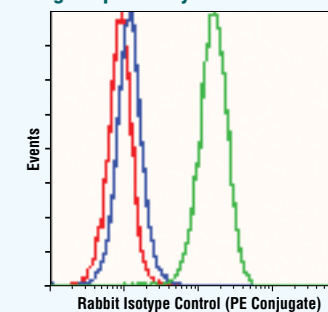
All of our antibodies validated for flow cytometry have been screened to determine optimal dilutions and to verify specificity. To determine optimal dilution, an antibody is serially diluted and analyzed on a positive cell line using flow cytometry. The intensity of label at each dilution is compared to a similarly diluted, concentration matched, nonspecific isotype control or a non-expressing cell line. The results are then plotted on a titration curve (mean fluorescence versus dilution) to determine the optimal dilution. In addition, each antibody is tested for activation state specificity by comparing the label on treated and untreated cells. For example, the label from a phospho-specific antibody should be strong in conditions that are known to favor phosphorylation, and decreased in conditions that inhibit phosphorylation; the label from a total protein antibody should be unaffected by the treatments. Cells may also be treated with phosphatase to confirm the phospho specificity of the antibody or to estimate the baseline level of phosphorylation. Isotype control antibodies are used to estimate the nonspecific binding of target primary antibodies due to F_c receptor binding or other protein-protein interactions. A number of blocking peptides that can be used to verify specificity or to examine the level of nonspecific binding are also available.

Phospho-Specificity:



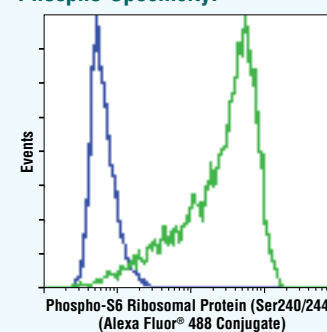
Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #4324: Flow cytometric analysis of human whole blood, untreated (red) or treated with Human Granulocyte Colony Stimulating Factor (hG-CSF) #8930 (blue), using #4324.

Target Specificity:



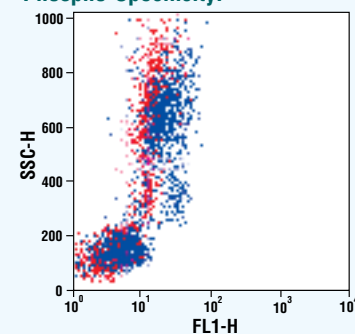
Rabbit (DA1E) mAb IgG XP™ Isotype Control (PE Conjugate) #5742: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9551, and U0126 #9903 (blue), using Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb (PE Conjugate) #5315 compared to concentration matched #5742 (red).

Phospho-Specificity:



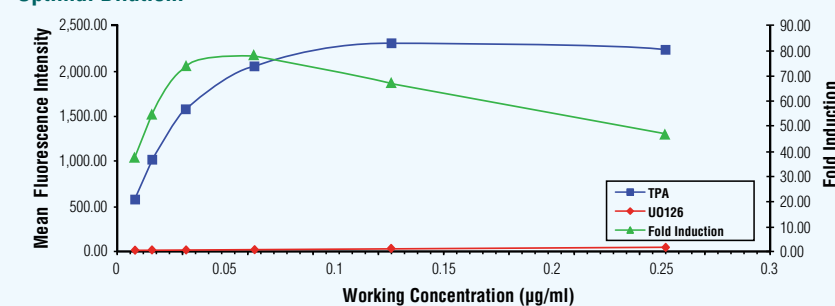
Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) #5018: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9551, and U0126 #9903 (blue), using #5018.

Phospho-Specificity:



Phospho-Stat1 (Tyr701) (58D6) Rabbit mAb (Alexa Fluor® 488 Conjugate) #9174: Flow cytometric analysis of human whole blood, untreated (red) or treated with hIFN-γ #8901 (blue), using #9174.

Optimal Dilution:



Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb #4370: Flow cytometric analysis of Jurkat cells, treated with U0126 #9903 (red) or TPA #4174 (blue), using serial dilutions of #4370. The fold induction is shown in green.

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Cell Signaling Technology®, CST™, Exceptional Performance™, XMT®, and XP™ are trademarks of Cell Signaling Technology, Inc. / Motif antibodies are covered by U.S. Patent Nos.: 6,441,140; 6,982,318; 7,259,022; 7,344,714; U.S.S.N. 11,484,485; and all foreign equivalents. Use of Motif antibodies from Cell Signaling Technology (CST) within certain methods (e.g., U.S. Patent No.'s 7,198,896 & 7,300,753) may require a license from CST. For information regarding academic licensing terms please have your technology transfer office contact CST Legal Department at CST_ip@cellsignal.com. For information regarding commercial licensing terms please contact CST Pharma Services at ptmscan@cellsignal.com. Jak antibodies are sold under license from Chemicon International, Inc. relating to U.S. Patent No. 5,658,791. Selected Rabbit Monoclonals are produced under license (granting certain rights, including those under U.S. Patent No. 5,675,063 and in some instances 7,429,487) from Epitomics, Inc. / Anti-FLAG® is a trademark of Sigma-Aldrich. / DRAQ5® is a trademark of Biostatus Ltd. / Alexa Fluor® and SYBR® are trademarks of Molecular Probes, Inc. / The Alexa Fluor® dye conjugated secondary antibodies are sold under license from Life Technologies, Inc., for research use only in immunocytochemistry, immunohistochemistry, high content screening (HCS) analysis, or flow cytometry applications.

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Conjugated Antibodies

Cell Signaling Technology (CST) offers Alexa Fluor® and PE-conjugated antibodies that are optimized for flow cytometry. The combination of Alexa Fluor® and PE dyes, which exhibit superior brightness and photostability, with the highest quality CST™ antibodies results in conjugates with bright signal and low background. All conjugated antibodies are validated in-house. Price-competitive and high-quality custom antibody conjugation of CST catalog antibodies is offered from our Custom Conjugation Group. Contact your sales representative at sales@cellsignal.com for more information.

Isotype Controls

| | Reactivity | Conjugated Antibodies | | |
|---|------------|-----------------------|-------|-------|
| | | 488 | PE | 647 |
| Mouse IgG1 Isotype Control (MOPC-21) | — | #4878 | — | #4843 |
| #3900 Rabbit (DA1E) mAb IgG XP™ Isotype Control | — | #2975 | #5742 | #2985 |
| Rabbit IgG (Polyclonal) Isotype Control | — | #4340 | — | #3452 |
| #5415 Mouse (G3A1) mAb IgG1 Isotype Control | — | — | #6899 | — |

Epitope Tag Antibody

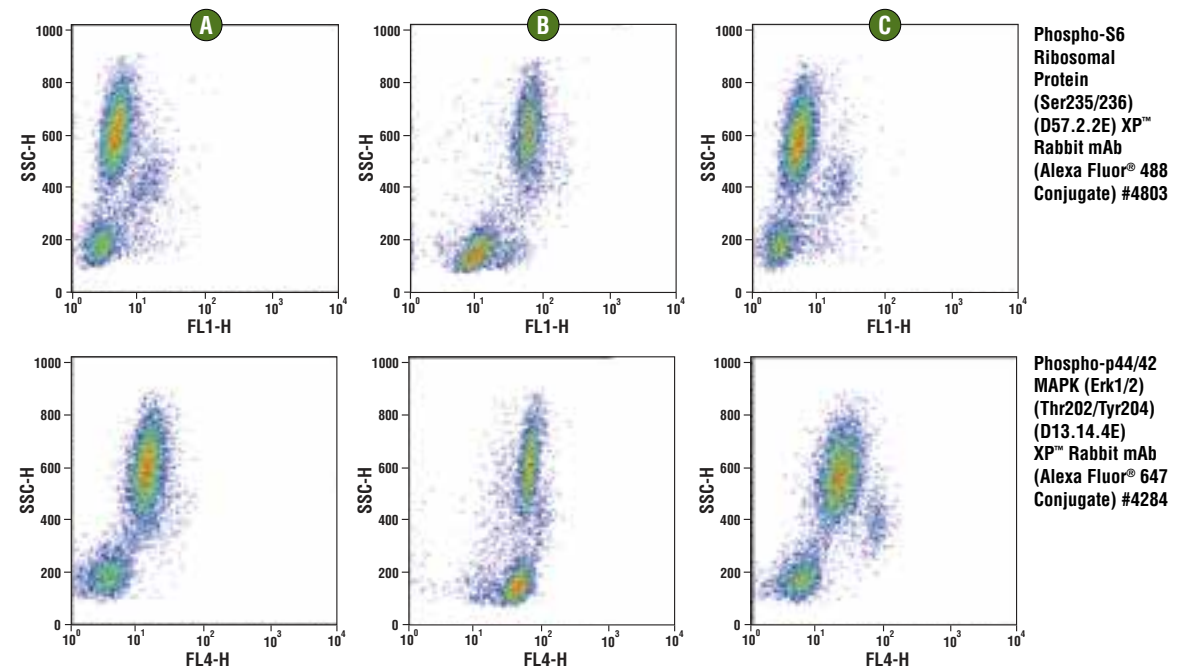
| | Reactivity | Conjugated Antibodies | | |
|---|------------|-----------------------|----|-------|
| | | 488 | PE | 647 |
| #2368 DYKDDDDK Tag Antibody (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) | All | #5407 | — | #3916 |
| #2367 HA-Tag (6E2) Mouse mAb | All | #2350 | — | #3444 |
| #2624 GST (26H1) Mouse mAb | All | #3368 | — | #3445 |
| #2276 Myc-Tag (9B11) Mouse mAb | All | #2279 | — | #2233 |

Target-specific Antibody (Unconjugated)

| | Reactivity | Conjugated Antibodies | | |
|---|---|-----------------------|-------|-------|
| | | 488 | PE | 647 |
| #2855 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb | H, M, R, Mk, Dm | #2846 | — | #5123 |
| #2965 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb | H, M, R, Hm, Mk | #2918 | — | #3375 |
| #4060 Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb | H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg) | #4071 | #5315 | #4075 |
| #4058 Phospho-Akt (Ser473) (193H12) Rabbit mAb | H, M, R | #2336 | — | #2337 |
| #2966 Akt (5G3) Mouse mAb | H, M, R, Hm | #2917 | — | #2944 |
| #4691 Akt (pan) (C67E7) Rabbit mAb | H, M, R, Mk, Dm | #5084 | — | #5186 |
| #2827 Phospho-Bcl-2 (Ser70) (5H2) Rabbit mAb | H | #2834 | — | — |
| #2764 Bcl-xL (54H6) Rabbit mAb | H, M, R, Mk | #2767 | — | — |
| #3195 E-Cadherin (24E10) Rabbit mAb | H, M, (Dg) | #3199 | — | — |
| #9661 Cleaved Caspase-3 (Asp175) Antibody | H, M, R, Mk, B, (Dg, Pg) | #9669 | — | — |
| #2677 β-Catenin (L54E2) Mouse mAb (IF Preferred) | H, (M, R, Mk, Pg) | #2849 | — | #4627 |
| #3570 CD44 (156-3C11) Mouse mAb | H | #3516 | — | — |
| #4850 COX IV (3E11) Rabbit mAb | H, R, Mk, Z, B, Pg | #4853 | — | — |
| #9198 Phospho-CREB (Ser133) (87G3) Rabbit mAb | H, M, R | #9187 | — | — |
| #4135 Cyclin B1 (V152) Mouse mAb | H, M, (Hm) | #4112 | — | #4118 |
| #4267 EGF Receptor (D38B1) XP™ Rabbit mAb | H, M, Mk | #5616 | — | #5588 |
| #2929 EpCAM (VU109) Mouse mAb | H | #5198 | — | #5447 |
| #2251 FosB (5G4) Rabbit mAb | H, M, R | #2023 | — | — |
| #2118 GAPDH (14C10) Rabbit mAb | H, M, R, Mk | #3906 | — | #3907 |
| #2024 Hexokinase I (C35C4) Rabbit mAb | H, M | #3689 | — | #3540 |
| #9718 Phospho-Histone H2A.X (Ser139) (20E3) Rabbit mAb | H, M, R, Mk | #9719 | #5763 | #9720 |
| #3377 Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb | H, M, R, Mk, Z | #3465 | #5764 | #3458 |
| #9701 Phospho-Histone H3 (Ser10) Antibody | H, M, R, Mk, C, Dm, Z, Sc, (X) | #9708 | — | #9716 |
| #9649 Acetyl-Histone H3 (Lys9) (C5B11) Rabbit mAb | H, M, R, Mk, Z, (Sc) | #9683 | — | #4484 |
| #4876 HSP70 (D69) Antibody | H, M, R, Mk | #4837 | — | #4008 |
| #4814 IκBα (L35A5) Mouse mAb (Amino-terminal Antigen) | H, M, R, Mk, B, Pg | #5743 | — | — |
| #4545 Pan-Keratin (C11) Mouse mAb | H, R, Mk | #4523 | #5075 | #4528 |
| #3308 c-Kit (Ab81) Mouse mAb | H | #3310 | — | — |
| #3007 Phospho-MAPKAPK-2 (Thr334) (27B7) Rabbit mAb | H, M, R, Mk | #4338 | — | #4320 |
| #9154 Phospho-MEK1/2 (Ser217/221) (41G9) Rabbit mAb | H, M, R, Mk, Dm, (C) | #4660 | — | #5068 |
| #2983 mTOR (7C10) Rabbit mAb | H, M, R, Mk | #5043 | — | — |
| #4903 Nanog (D73G4) XP™ Rabbit mAb | H, (Mk) | — | — | #5448 |
| #3033 Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb | H, M, R, Hm, Mk, Pg, (Dg) | #4886 | #5733 | #4887 |
| #2840 Oct-4A (C30A3) Rabbit mAb | H, M | #5177 | — | #5263 |
| #2947 p21 Waf1/Cip1 (12D1) Rabbit mAb | H, Mk | #5487 | — | — |
| #9215 Phospho-p38 MAPK (Thr180/Tyr182) (3D7) Rabbit mAb | H, M, R, Mk, Dm, Pg, Sc, (Hm, Mi, Z, B) | — | #6908 | — |

Target-specific Antibody (Unconjugated)

| | Reactivity | Conjugated Antibodies | | |
|---|--|-----------------------|-------|-------|
| | | 488 | PE | 647 |
| #9216 Phospho-p38 MAPK (Thr180/Tyr182) (28B10) Mouse mAb | H, M, R, Mk, Sc, (Z) | #4551 | — | #4552 |
| #4370 Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb | H, M, R, Hm, Mk, Mi, Dm, Z, B, Dg, Pg, Sc | #4344 | #5682 | #4284 |
| #9106 Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg | #4374 | — | #4375 |
| #4695 p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb | H, M, R, Hm, Mk, Mi, Dm, Z, B, Dg, Pg, Sc, (C) | #4780 | — | #5376 |
| #9286 Phospho-p53 (Ser15) (16G8) Mouse mAb | H | #9235 | — | — |
| #2527 p53 (7F5) Rabbit mAb | H, Mk | #5429 | — | — |
| #2524 p53 (1C12) Mouse mAb | H, M, R, Mk | #2015 | — | #2533 |
| #2258 PU.1 (9G7) Rabbit mAb | H, M, (Mk, Pg) | #2216 | — | #2240 |
| #4858 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb | H, M, R, Mk, Sc | #4803 | #5316 | #4851 |
| #4856 Phospho-S6 Ribosomal Protein (Ser235/236) (2F9) Rabbit mAb | H, M, R | #4854 | — | — |
| #5364 Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP™ Rabbit mAb | H, M, R, Mk | #5018 | — | — |
| #2317 S6 Ribosomal Protein (54D2) Mouse mAb | H, M, R, Mk, Dm | #5317 | — | #5548 |
| #9255 Phospho-SAPK/JNK (Thr183/Tyr185) (G9) Mouse mAb | H, M, R, Hm, Sc | — | #5755 | #9257 |
| #3579 Sox2 (D6D9) XP™ Rabbit mAb | H, (Mk, B, Dg) | #5049 | — | #5067 |
| #4755 SSEA4 (MC813) Mouse mAb | H | — | — | #5836 |
| #9167 Phospho-Stat1 (Tyr701) (58D6) Rabbit mAb | H, M | #9174 | — | — |
| #9145 Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb | H, M, R, Mk | #4323 | — | #4324 |
| #9314 Phospho-Stat5 (Tyr694) (C71E5) Rabbit mAb | H, M, (R, Mk, B) | #3939 | — | #9365 |
| #2808 Survivin (71G4B7) Rabbit mAb | H, M, R | #2810 | — | #2866 |
| #2125 α-Tubulin (11H10) Rabbit mAb | H, M, R, Mk, Dm, B, (Dg) | #5063 | — | #5046 |
| #2128 β-Tubulin (9F3) Rabbit mAb | H, M, R, Mk, Z, B, (C) | #3623 | #5867 | #3624 |
| #9411 Phospho-Tyrosine Mouse mAb (P-Tyr-100) | All | #9414 | — | #9415 |
| #2479 VEGF Receptor 2 (55B11) Rabbit mAb | H, M | #3627 | — | #3628 |
| #5741 Vimentin (D21H3) XP™ Rabbit mAb | — | — | — | #9856 |
| Zap-70 | H | — | — | #2707 |



Flow cytometric analysis of whole blood, either untreated (A), treated with TPA #4174 (B), or LPS (C), using either Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) #4803 (top) or Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #4284 (bottom).

XP™ Monoclonal Antibodies

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.

These antibodies are generated using XMT® technology, a proprietary monoclonal method developed at CST. The 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 of our 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.

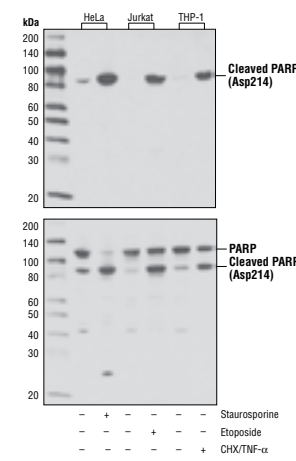
= eXceptional Performance™

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.

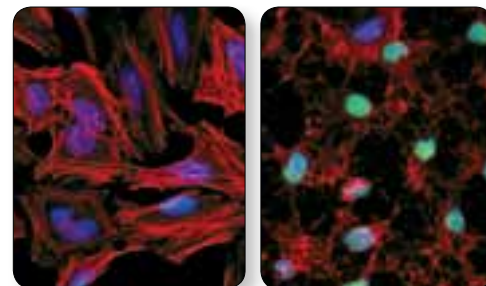
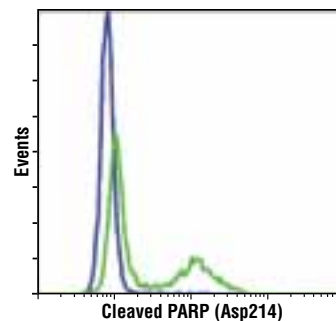
Visit our website for more experimental details, additional information, and a complete list of available XP monoclonal antibodies.

Cleaved PARP (Asp214) (D64E10) XP™ Rabbit mAb #5625 is an example of an antibody with superior performance in a wide range of tested applications.

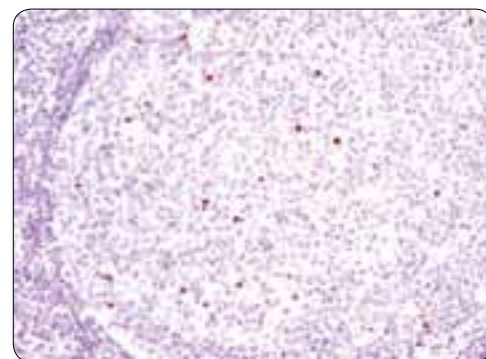
WB analysis of extracts from HeLa cells, untreated or treated with Staurosporine #9953 (1 μM, 3 hr), Jurkat cells, untreated or etoposide-treated (25 μM, overnight), and THP-1 cells, untreated or cycloheximide-treated (CHX, 10 μg/ml, overnight) followed by treatment with hTNF-α #8902 (20 ng/ml, 4 hr), using #5625 (upper), or total PARP Antibody #9542 (lower).



Flow cytometric analysis of Jurkat cells, untreated (blue) or etoposide-treated (green), using #5625.



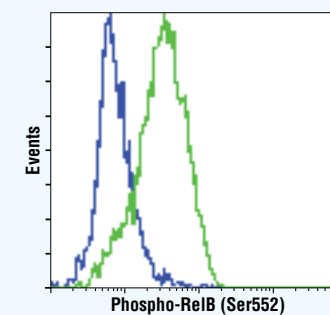
Confocal IF analysis of HeLa cells, untreated (left) or treated with Staurosporine #9953 (right), using #5625 (green). Actin filaments were labeled with DY-554 phalloidin. Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).



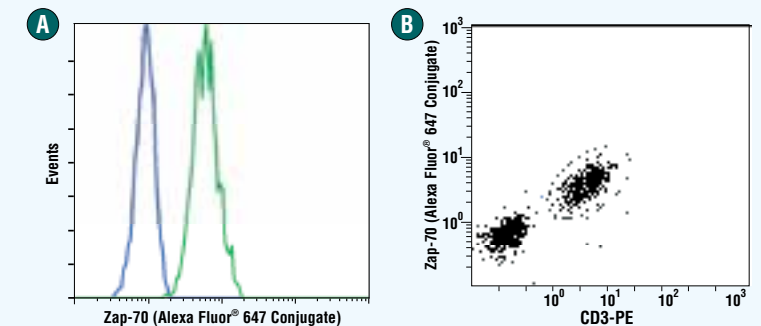
IHC analysis of paraffin-embedded human tonsil using #5625.

Immunology and Inflammation

| | Applications | Reactivity |
|--|------------------------|--------------------|
| #4327 Phospho-AML1 (Ser249) Antibody | W, IP, IF-IC, F | H |
| #4336 AML1 (D33G6) XP™ Rabbit mAb | W, IP, IHC-P, IF-IC, F | H |
| #4334 AML1 Antibody | W, IF-IC, F | H, Mk |
| #4443 CD3ε (CD3-12) Rat mAb | W, IP, F | H, M, (Pg) |
| #3563 CD4 (Edu-2) Mouse mAb | F | H |
| #3572 CD8 (RIV11) Mouse mAb | F | H |
| #3565 CD10 (CB-CALLA) Mouse mAb | F | H |
| #3574 CD19 Antibody | W, IP, IF-IC, F | H, M |
| #3568 CD31 (PECAM-1) (158-2B3) Mouse mAb | F | H |
| #3528 CD31 (PECAM-1) (89C2) Mouse mAb | W, IP, IHC-P, IF-IC, F | H |
| #3569 CD34 (IC0115) Mouse mAb | IHC-P, F | H |
| #3570 CD44 (156-3C11) Mouse mAb | W, IP, IHC-P, IF-IC, F | H |
| #3516 CD44 (156-3C11) Mouse mAb (Alexa Fluor® 488 Conjugate) | IF-IC, F | H |
| NEW #4041 CD44 (156-3C11) Mouse mAb (Biotinylated) | W, F | H |
| #5640 CD44 (8E2) Mouse mAb | W, IP, IF-IC, F | H, M, R |
| #3575 CD45 (136-4B5) Mouse mAb | IHC-P, F | H |
| NEW #5173 Phospho-CD79A (Tyr182) Antibody | W, IP, IF-IC, F | H, (M, R) |
| #4841 Cox1 Antibody | W, IP, F | H, M, R, Mk |
| #2294 DRAK2 (33D7) Rabbit mAb | W, IP, IHC-P, F | M |
| #2593 Evi-1 (C50E12) Rabbit mAb | W, IP, IF-IC, F | H |
| #4589 GATA-1 (D24E4) XP™ Rabbit mAb | W, IP, IF-IC, F | H |
| #3535 GATA-1 (D52H6) XP™ Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R |
| #3892 HS1 (D5A9) XP™ Rabbit mAb (Rodent Specific) | W, IP, IHC-P, F | M, R |
| #3890 HS1 (D83A8) XP™ Rabbit mAb (Human Specific) | W, IP, IHC-P, IF-IC, F | H |
| #4503 HS1 Antibody (Human Specific) | W, IP, F | H |
| #4814 IκBα (L35A5) Mouse mAb (Amino-terminal Antigen) | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, B, Pg |
| NEW #5743 IκBα (L35A5) Mouse mAb (Amino-terminal Antigen) (Alexa Fluor® 488 Conjugate) | F | H, M, R, Mk, B, Pg |
| #3416 IKKε (D61F9) XP™ Rabbit mAb | W, IP, IF-IC, F | M, R |
| #4964 IRF-4 Antibody | W, IP, IF-IC, F, ChIP | H |
| #3230 Jak2 (D2E12) XP™ Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, (Mk) |
| NEW #4040 Jak2 (D2E12) XP™ Rabbit mAb (Biotinylated) | W, F | H, M, R |
| #9166 LAT Antibody | W, IP, IHC-P, F | H, M, (R) |
| #2787 Lck (73A5) Rabbit mAb | W, IP, IF-IC, F | H |
| #2088 LEDGF (C57G11) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, (Mk) |
| #3329 MNDA (3C1) Rat mAb | W, F | H |
| #3576 CD56 (NCAM) (123C3) Mouse mAb | W, IHC-P, F | H |



Phospho-RelB (Ser552) (D41B9) XP™ Rabbit mAb #5025: Flow cytometric analysis of Raji cells, untreated (blue) or treated with TPA #4174 (green), using #5025.



Zap-70 (136F12) Rabbit mAb (Alexa Fluor® 647 Conjugate) #2707: Flow cytometric analysis of Ramos B (blue) and Jurkat T (green) cells using #2707 (A). Two-color flow cytometric analysis of a mixed population of T and B cells (Jurkat and Ramos, respectively) using #2707 and a CD3 antibody. CD3 negative B cells have little or no Zap-70 staining, while CD3-positive T cells stain brightly for Zap-70 protein (B).

Application References:

IRF-4 Antibody #4964: Staudt, V. et al. (2010) Interferon-regulatory factor 4 is essential for the developmental program of T helper 9 cells. *Immunity* 33, 192–202.

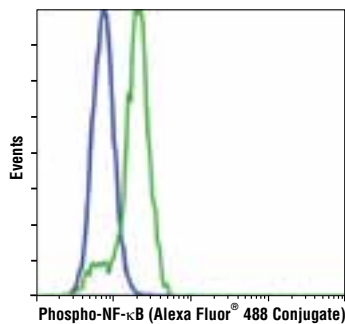
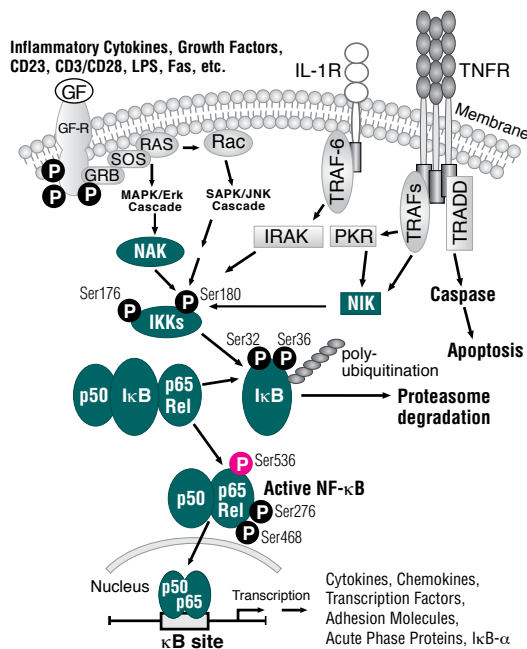
NF-κB Signaling

Transcription factors of the nuclear factor κ B (NF-κB)/Rel family play a pivotal role in inflammatory and immune responses. There are five family members in mammals: RelA, c-Rel, RelB, NF-κB1 (p105/p50), and NF-κB2 (p100/p52). Both p105 and p100 are proteolytically processed by the proteasome to produce p50 and p52, respectively. Rel proteins bind p50 and p52 to form dimeric complexes that bind DNA and regulate transcription. In unstimulated cells, NF-κB is sequestered in the cytoplasm by IκB inhibitory proteins. NF-κB-activating agents can induce the phosphorylation of IκB proteins, targeting them for rapid degradation through an ubiquitin-proteasome pathway, and releasing NF-κB to enter the nucleus where it regulates gene expression.

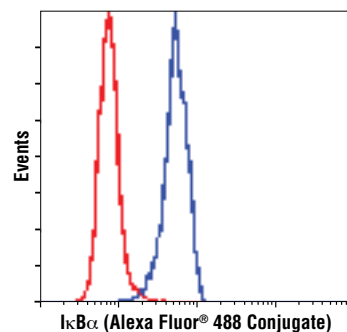
Application References:

Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb #3033: Xie, S. et al. (2010) IL-17 activates the canonical NF-κB signaling pathway in autoimmune B cells of BXD2 mice to upregulate the expression of regulators of G-protein signaling 16. *J. Immunol.* 184, 2289–2296.

Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb (Alexa Fluor® 488 Conjugate) #4886: Willinger, T. et al. (2005) Molecular signatures distinguish human central memory from effector memory CD8 T cell subsets. *J. Immunol.* 175, 5895–5903.



Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb (Alexa Fluor® 488 Conjugate) #4886: Flow cytometric analysis of HeLa cells, untreated (blue) or TNF-α-treated (green), using #4886.



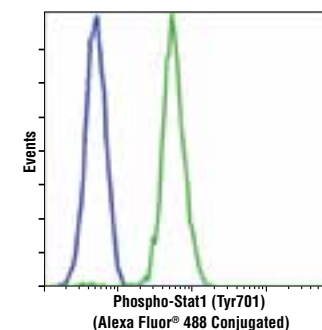
IκBα (L35A5) Mouse mAb (Amino-terminal Antigen) (Alexa Fluor® 488 Conjugate) #5743: Flow cytometric analysis of HeLa cells using #5743 (blue) compared to concentration matched Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor® 488 Conjugate) #4878 (red).

| | Applications | Reactivity |
|--|------------------------------|--------------------------------|
| #3017 NF-κB2 p100/p52 (18D10) Rabbit mAb (Human Specific) | W, IHC-P, F | H, Mk |
| #3033 Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb | W, IP, IF-IC, F | H, M, R, Hm, Mk, Pg, (Dg) |
| #4886 Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, R, Hm, Mk, Pg, (Dg) |
| #4887 Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, R, Hm, Mk, Pg, (Dg) |
| NEW #5733 Phospho-NF-κB p65 (Ser536) (93H1) Rabbit mAb (PE Conjugate) | CA F | H, M, R, Hm, Mk, Pg, (Dg) |
| #4764 NF-κB p65 (C22B4) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk, B, (Dg) |
| NEW #3987 NF-κB p65 (E498) Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Hm, Mk, Mi, B, Dg, Pg |
| #3550 PIAS1 (D33A7) XP™ Rabbit mAb | XP W, IF-IC, F | H, M, R, Mk |
| #9777 Pirin (1E8) Rat mAb | W, IP, F | H, M, R, Hm, Mk, B |
| #2258 PU.1 (9G7) Rabbit mAb | W, IP, IHC-P, IF-IC, F, ChIP | H, M, (Mk, Pg) |
| #2216 PU.1 (9G7) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, (Mk, Pg) |
| #2240 PU.1 (9G7) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, (Mk, Pg) |
| #2266 PU.1 Antibody | W, IP, IHC-P, IF-IC, F, ChIP | H, M, (Mk, Pg) |
| #4727 c-Rel Antibody | W, IP, IHC-P, IF-IC, F | H, Mk |
| NEW #5025 Phospho-RelB (Ser552) (D41B9) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, M, (R, Mk, B, Dg) |
| #4999 Phospho-RelB (Ser552) Antibody | W, IP, IF-IC, F | H, M, (R, Mk, B, Dg) |
| #2805 SH2D1A (XLP 1D12) Rat mAb | W, F | H |

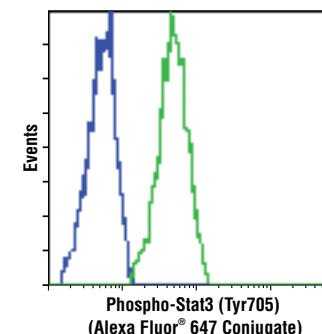
| | Applications | Reactivity |
|--|--|-------------------------|
| NEW #9167 Phospho-Stat1 (Tyr701) (58D6) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-IC, F, ChIP | H, M |
| #9174 Phospho-Stat1 (Tyr701) (58D6) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M |
| #9171 Phospho-Stat1 (Tyr701) Antibody | W, IP, IF-IC, F, ChIP | H, M, R, (B, Dg) |
| #9177 Phospho-Stat1 (Ser727) Antibody | W, IF-IC, F, ChIP | H, M, R, (B) |
| #9145 Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb | XP W, IP, IHC-P, IHC-F, IF-IC, F, ChIP | H, M, R, Mk |
| #4323 Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) | XP CA F | H, M, R, Mk |
| #4324 Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | XP CA F | H, M, R, Mk |
| #9138 Phospho-Stat3 (Tyr705) (3E2) Mouse mAb | W, IP, F | H, M, (R, B) |
| #4113 Phospho-Stat3 (Tyr705) (M9C6) Mouse mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| #9139 Stat3 (124H6) Mouse mAb | W, IP, IHC-P, IF-IC, F, ChIP | H, M, R, Mk |
| NEW #4322 Phospho-Stat5 (Tyr694) (D47E7) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, M, (R, Mk, B) |
| #9359 Phospho-Stat5 (Tyr694) (C11C5) Rabbit mAb | W, IP, IHC-P, F | H, M, (R, Mk, B) |
| #9314 Phospho-Stat5 (Tyr694) (C71E5) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, (R, Mk, B) |
| #3939 Phospho-Stat5 (Tyr694) (C71E5) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, (R, Mk, B) |
| #9365 Phospho-Stat5 (Tyr694) (C71E5) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, (R, Mk, B) |
| #9351 Phospho-Stat5 (Tyr694) Antibody | W, F, ChIP | H, M, (R, B) |
| #4807 Stat5a (4H1) Mouse mAb | W, IP, F | H |
| NEW #9361 Phospho-Stat6 (Tyr641) Antibody | W, IP, IF-IC, F | H, (B) |
| NEW #5483 Phospho-TBK1/NAK (Ser172) (D52C2) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, (M, R, Mk, X, B, Dg) |
| #5251 Phospho-TCTP (Ser46) Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #2701 Phospho-Zap-70 (Tyr319)/Syk (Tyr352) Antibody | W, IP, IF-IC, F | H, M |
| #2704 Phospho-Zap-70 (Tyr493) Antibody | W, IP, F | H, (M, R) |
| #3165 Zap-70 (D1C10E) XP™ Rabbit mAb | XP W, IP, IF-F, F | H, M |
| #2707 Zap-70 (136F12) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H |
| #2705 Zap-70 (99F2) Rabbit mAb | W, IP, IHC-P, F | H, M |

Jak/Stat Signaling

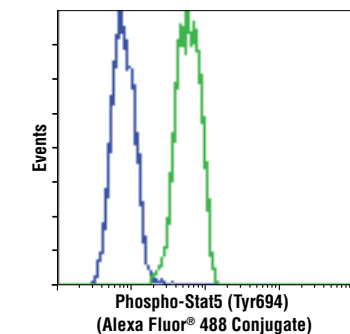
Cytokine signaling is integral to an efficient immune response. The principal pathway involved in cytokine signaling is the Janus kinase-signal transducer and activator of transcription (Jak/Stat) pathway. Jaks and Stats regulate growth, survival, differentiation, and pathogen resistance. Cytokine binding induces receptor dimerization, thereby activating the associated Jaks which phosphorylate themselves and the receptor. These phosphorylated sites serve as docking sites for the SH2 domain-containing Stats, such as Stat3, and for SH2-containing proteins and adaptors that link the receptor to MAP kinase, PI3 Kinase/Akt, and other cellular pathways. Receptor-bound Stats phosphorylated by Jaks dimerize and translocate to the nucleus where they regulate target gene transcription.



Phospho-Stat1 (Tyr701) (58D6) Rabbit mAb (Alexa Fluor® 488 Conjugate) #9174: Flow cytometric analysis of Jurkat cells, untreated (blue) or IFN-α-treated (green), using #9174.



Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #4324: Flow cytometric analysis of Jurkat cells, untreated (blue) or IFN-α-treated (green), using #4324.



Phospho-Stat5 (Tyr694) (C71E5) Rabbit mAb (Alexa Fluor® 488 Conjugate) #3939: Flow cytometric analysis of TF-1 cells, untreated (blue) or treated with GM-CSF #8922 (green), using #3939.

Recombinant Cytokines and Growth Factors

Cell Signaling Technology (CST) is now offering a growing selection of recombinant cytokines and growth factors. These reagents are produced and bioassayed in-house, and are held to the same unparalleled quality standards as the CST™ antibodies you know and trust.

- Produced and bioassayed in-house with the highest purity and bioactivity.
- Comparison of multiple lots, stringent product specifications, and rigorous quality control ensure maximum lot-to-lot consistency.
- Validation includes the use of CST antibodies to assess downstream signaling events.
- Multi-milligram quantities always available.
- Carrier or carrier free formulation available.

Quality

- Most are greater than 98% pure as demonstrated by SDS-PAGE.
- Endotoxin levels are tested by the LAL assay and are less than 0.01 ng/μg cytokine.
- Reduced and non-reduced protein is run on SDS-PAGE.
- ED₅₀ or maximum 50% response is determined by a standard cell based assay for every lot.
- Several lots are tested side by side to ensure consistent bioactivity.
- Bioactivity and purity data is shown on each product webpage and datasheet.

Consistency

- Strict specifications are set and enforced.
- Each lot is compared to previous lots for consistency in purity and bioactivity.
- Lyophilized lots are quality assured for sterility and bioactivity.

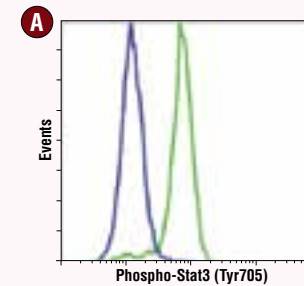
Dependability

- Products are produced in-house and ready to ship.
- Products are available in multi-milligram sizes.
- CST sales and technical support ensures the highest quality customer service and support.

| |
|---|
| NEW #5413 Human ^{HIS6} BAFF/TNFSF13B (h ^{HIS6} BAFF) |
| NEW #3583 Human CD40 Ligand (hCD40L) |
| NEW #5717 Human Cystatin C (hCystatin C) |
| #8916 Human Epidermal Growth Factor (hEGF) |
| #5493 Human Epigen |
| #5494 Human Epregrulin |
| NEW #5452 Human ^{HIS6} Fas Ligand/TNFSF6 (h ^{HIS6} FasL) |
| NEW #5234 Human FGF acidic (hFGF acidic) |
| #8910 Human Basic Fibroblast Growth Factor (hFGF basic/FGF2) |
| NEW #5414 Mouse Basic Fibroblast Growth Factor (mFGF basic/FGF2) |
| #8924 Human Fms-related Tyrosine Kinase 3 Ligand (hFLT3L) |
| #8930 Human Granulocyte Colony Stimulating Factor (hG-CSF) |
| #8922 Human Granulocyte Macrophage Colony Stimulating Factor (hGM-CSF) |
| #5191 Mouse Granulocyte Macrophage Colony Stimulating Factor (mGM-CSF) |
| #8927 Human Interferon-α1 (hIFN-α1) |
| #8901 Human Interferon-γ (hIFN-γ) |
| #8917 Human Insulin-like Growth Factor I (hIGF-I) |
| NEW #5236 Human Interleukin-1α (hIL-1α) |
| NEW #5273 Mouse Interleukin-1α (mIL-1α) |
| #8900 Human Interleukin-1β (hIL-1β) |
| NEW #5204 Mouse Interleukin-1β (mIL-1β) |
| NEW #5454 Human Interleukin-2 (hIL-2) (mammalian derived) |
| #8907 Human Interleukin-2 (hIL-2) |
| NEW #5201 Mouse Interleukin-2 (mIL-2) |
| #8918 Human Interleukin-3 (hIL-3) |
| #8923 Mouse Interleukin-3 (mIL-3) |
| #8919 Human Interleukin-4 (hIL-4) |
| NEW #5208 Mouse Interleukin-4 (mIL-4) |
| #8904 Human Interleukin-6 (hIL-6) |
| NEW #5217 Mouse Interleukin-7 (mIL-7) |
| NEW #5358 Human Interleukin-10 (hIL-10) (mammalian derived) |

| |
|---|
| #8903 Human Interleukin-10 (hIL-10) |
| #8905 Human Interleukin-13 (hIL-13) |
| NEW #5242 Mouse Interleukin-13 (mIL-13) |
| #8928 Human Interleukin-17A (hIL-17A) |
| NEW #5227 Mouse Interleukin-17A (mIL-17A) |
| #8906 Human Interleukin-17F (hIL-17F) |
| #8920 Human Interleukin-21 (hIL-21) |
| #8931 Human Interleukin-22 (hIL-22) |
| #5224 Mouse Interleukin-22 (mIL-22) |
| NEW #5164 Human Interleukin-28A (hIL-28A/IFN-λ2) |
| #5183 Human Interleukin-29 (hIL-29) |
| #8929 Human Macrophage Colony Stimulating Factor (hM-CSF) |
| NEW #5221 Human β-Nerve Growth Factor (hβ-NGF) |
| #5218 Human Neuregulin-1 (hNRG-1) |
| NEW #5371 Mouse Oncostatin M (mOSM) |
| #8913 Human Platelet-Derived Growth Factor AA (hPDGF-AA) |
| #8912 Human Platelet-Derived Growth Factor BB (hPDGF-BB) |
| #8925 Human Stem Cell Factor (hSCF) |
| #5495 Human Transforming Growth Factor α (hTGF-α) |
| NEW #5154 Human Latent Transforming Growth Factor β1 (hLatent TGF-β1) |
| #8915 Human Transforming Growth Factor β1 (hTGF-β1) |
| NEW #5231 Mouse Transforming Growth Factor β1 (mTGF-β1) |
| #8406 Human Transforming Growth Factor β2 (hTGF-β2) |
| #8425 Human Transforming Growth Factor β3 (hTGF-β3) |
| #8902 Human Tumor Necrosis Factor-α (hTNF-α) |
| #5178 Mouse Tumor Necrosis Factor-α (mTNF-α) |
| #4698 Mouse ^{HIS6} Tumor Necrosis Factor-α (m ^{HIS6} TNF-α) |
| NEW #5314 Mouse Vascular Endothelial Growth Factor-120 (mVEGF ₁₂₀) |
| #8908 Human Vascular Endothelial Growth Factor-121 (hVEGF ₁₂₁) |
| #5211 Mouse Vascular Endothelial Growth Factor-164 (mVEGF ₁₆₄) |
| #8065 Human Vascular Endothelial Growth Factor-165 (hVEGF ₁₆₅) |

Lot-to-Lot Consistency of Human Interleukin-6 (hIL-6) #8904

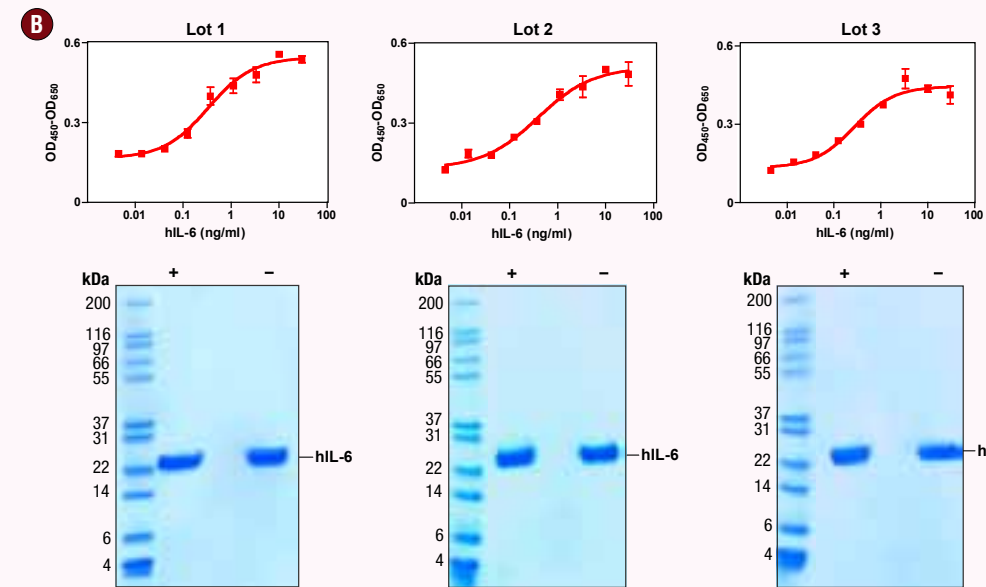


(A) Flow Cytometry

Flow cytometric analysis of TF-1 cells, untreated (blue) or treated with hIL-6 #8904 (green), using Phospho-Stat3 (Tyr705) (D3A7) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #4324.

(B) Comparison of Purity and Bioactivity

The proliferation of TF-1 cells was assessed after 48 hour treatment with increasing concentrations of hIL-6 #8904. Cells were incubated with a tetrazolium salt and the OD₄₉₀ - OD₆₅₀ was determined (top panels). The purity of recombinant hIL-6 was determined by SDS-PAGE using 6 μg reduced (+) and non-reduced (-) recombinant hIL-6 #8904 and staining overnight with Coomassie Blue (bottom panels).



The world's highest quality antibody provider has extended its expertise to Recombinant Cytokine and Growth Factor production.

Human Interferon-α1 (hIFN-α1) #8927

(A) Purity

The purity of recombinant hIFN-α1 was determined by SDS-PAGE of 6 μg reduced (+) and non-reduced (-) recombinant hIFN-α1 #8927 and staining overnight with Coomassie Blue.

(B) Downstream Signaling Events

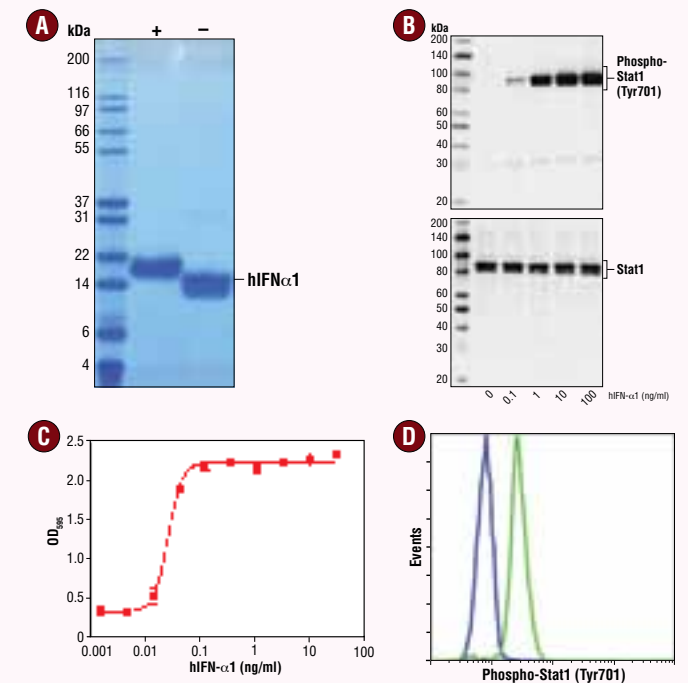
WB analysis of extracts from HeLa cells, untreated or treated with hIFN-α1 #8927 for 15 minutes, using Phospho-Stat1 (Tyr701) Antibody #9171 (upper) and Stat1 Antibody #9172 (lower).

(C) Bioactivity

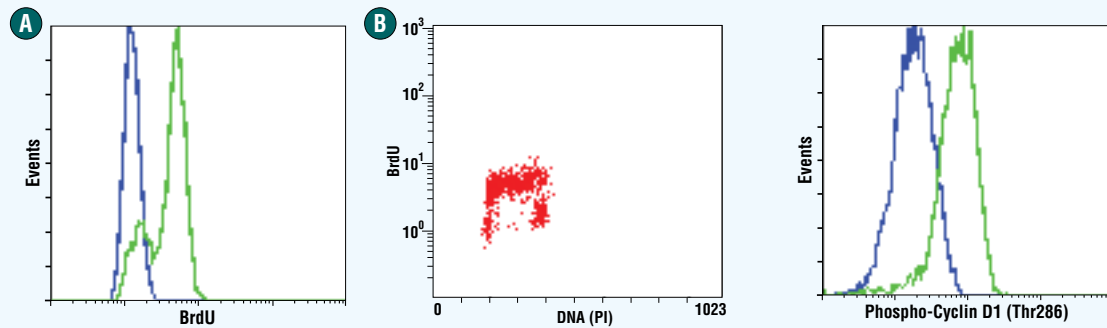
The bioactivity of recombinant hIFN-α1 was determined in a virus protection assay. HeLa cells were pretreated with increasing concentrations of hIFN-α1 #8927 for 24 hours. Cells were then inoculated with encephalomyocarditis virus (EMCV) and incubated for an additional 48 hours. Surviving cells were then fixed and stained with crystal violet and the OD₅₉₅ was determined.

(D) Flow Cytometry

Flow cytometric analysis of TF-1 cells, untreated (blue) or treated with hIFN-α1 #8927 (green), using Phospho-Stat1 (Tyr701) (58D6) Rabbit mAb (Alexa Fluor® 488 Conjugate) #9174.



Cell Cycle, Checkpoint Control, and DNA Damage



BrdU (Bu20a) Mouse mAb #5292: Flow cytometric analysis of Jurkat cells, untreated (blue) or BrdU incorporated for 30 minutes (green) (A), using #5292. Flow cytometric analysis of non-synchronized Jurkat cells incubated with BrdU for 30 minutes (B), using #5292 versus propidium iodide (DNA content).

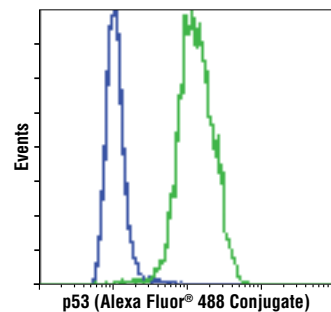
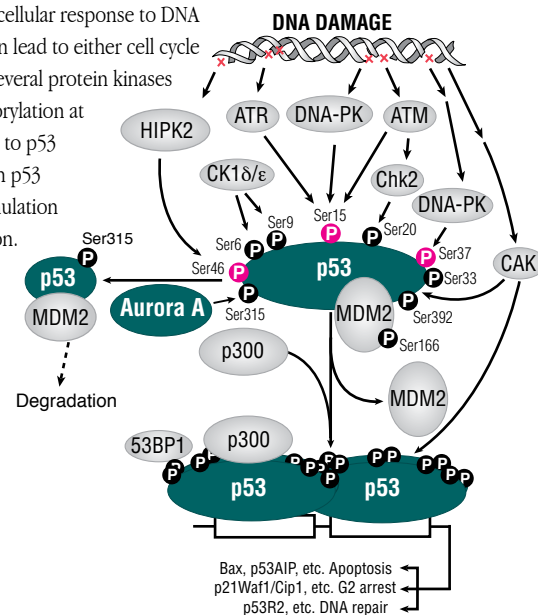
Phospho-Cyclin D1 (Thr286) (D2983) XP™ Rabbit mAb #3300: Flow cytometric analysis of HT-1080 cells, untreated (blue) or MG132-treated (green), using #3300.

Application References:

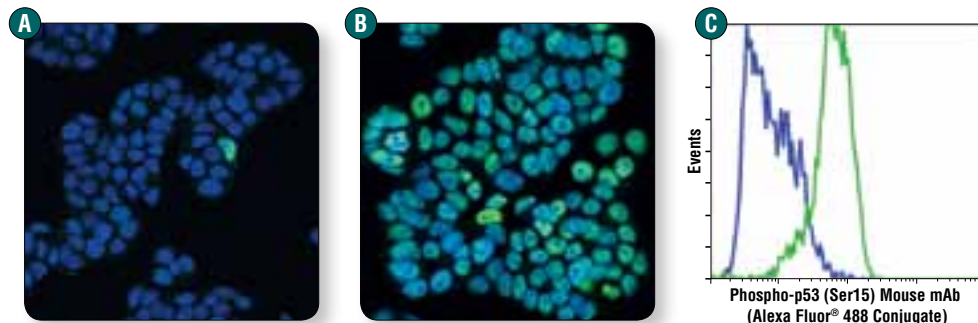
Phospho-Chk2 (Thr68) Antibody #2661: Castedo, M. et al. (2004) The cell cycle checkpoint kinase Chk2 is a negative regulator of mitotic catastrophe. *Oncogene* 23, 4353–4361.

p53 Tumor Suppressor

The p53 tumor suppressor protein plays a major role in the cellular response to DNA damage and other genomic aberrations. Activation of p53 can lead to either cell cycle arrest and DNA repair or apoptosis. DNA damage activates several protein kinases including ATM, ATR and DNA-PK and results in p53 phosphorylation at Ser15, Ser20, and Ser37. Phosphorylation at these sites leads to p53 activation and accumulation by reducing interaction between p53 and its negative regulator, MDM2. MDM2 inhibits p53 accumulation by targeting it for ubiquitination and proteasomal degradation.

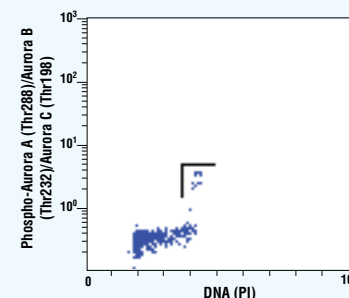


p53 (7F5) Rabbit mAb (Alexa Fluor® 488 Conjugate) #5429: Flow cytometric analysis of K-562 (blue) and HT-29 cells (green) using #5429.

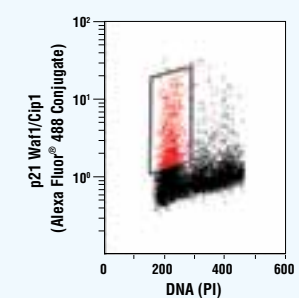


Phospho-p53 (Ser15) (16G8) Mouse mAb (Alexa Fluor® 488 Conjugate) #9235: Confocal IF analysis of HT-29 cells, untreated (A) or UV-treated (B), using #9235. Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye). Flow cytometric analysis of HT-29 cells (C), untreated (blue) or UV-treated (green), using #9235.

| | | Applications | Reactivity |
|-----------|---|---------------------------|--------------------------------|
| #2675 | Phospho-53BP1 (Ser1778) Antibody | W, IF-IC, F | H, Mk |
| #2914 | Phospho-Aurora A (Thr288)/Aurora B (Thr232)/Aurora C (Thr198) (D13A11) XP™ Rabbit mAb | XP W, IF-IC, F | H, M, R |
| #3094 | Aurora B/AIM1 Antibody | W, IP, F | H, M, R, Mk |
| #5292 | BrdU (Bu20a) Mouse mAb | IHC-P, IF-IC, F | All |
| #4539 | Phospho-cdc2 (Tyr15) (10A11) Rabbit mAb | W, IP, IF-IC, F | H, M, R, Mk |
| #9529 | Phospho-cdc25C (Ser198) Antibody | W, F | H |
| #2561 | Phospho-CDK2 (Thr160) Antibody | W, IP, F, E-P | H, M, R |
| #2546 | CDK2 (78B2) Rabbit mAb | W, IP, F | H, M, R, Mk |
| #2316 | CDK9 (C12F7) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Hm, Mk, B, Dg |
| #2348 | Phospho-Chk1 (Ser345) (133D3) Rabbit mAb | W, IF-IC, F | H, M, R, Mk |
| #2197 | Phospho-Chk2 (Thr68) (C13C1) Rabbit mAb | W, IP, IHC-P, F | H, (Mk) |
| #2661 | Phospho-Chk2 (Thr68) Antibody | W, IP, IF-IC, F | H, Mk |
| #4656 | Cyclin A (BF683) Mouse mAb | W, F | H |
| #4135 | Cyclin B1 (V152) Mouse mAb | W, F | H, M, (Hm) |
| #4112 | Cyclin B1 (V152) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, (Hm) |
| #4118 | Cyclin B1 (V152) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, (Hm) |
| #3300 | Phospho-Cyclin D1 (Thr286) (D2983) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, (Mk) |
| #2978 | Cyclin D1 (92G2) Rabbit mAb | W, IHC-P, F | H, M, R |
| #4136 | Phospho-Cyclin E (Thr62) Antibody | W, IP, IHC-P, F | H |
| #4944 | HR6A/HR6B Antibody | W, IF-IC, F | H, M, R, Mk, (C, Dm, X, Z) |
| #2786 | INCENP (A841) Antibody | W, IF-IC, F | H |
| #2807 | INCENP (P240) Antibody | W, IF-IC, F | H |
| #4822 | p15 INK4B Antibody | W, F | H, M, R |
| #2753 | Ku80 Antibody | W, IP, IHC-P, IF-IC, F | H, Mk, (M, R) |
| #3515 | MLH1 (4C9C7) Mouse mAb | W, IP, IF-IC, F | H, Mk |
| #4847 | Mre11 (31H4) Rabbit mAb | W, IP, IHC-P, IHC-F, F | H |
| #2017 | MSH2 (D24B5) XP™ Rabbit mAb | XP W, IP, IHC-P, IF-IC, F | H, M, Mk |
| #3520 | Phospho-NPM (Ser4) (D19C1) XP™ Rabbit mAb | XP W, F | H, (M, R, Mk, X, B, Dg) |
| #3517 | Phospho-NPM (Thr95) Antibody | W, IP, IF-IC, F | H, (M, R, Mk) |
| #2947 | p21 Waf1/Cip1 (12D1) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, Mk |
| NEW #5487 | p21 Waf1/Cip1 (12D1) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, Mk |
| #9286 | Phospho-p53 (Ser15) (16G8) Mouse mAb | W, IF-IC, F | H |
| #9235 | Phospho-p53 (Ser15) (16G8) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H |
| NEW #4030 | Phospho-p53 (Ser15) (16G8) Mouse mAb (Biotinylated) | W, F | H |
| #9289 | Phospho-p53 (Ser37) Antibody | W, IF-IC, F | H, Mk |
| #2521 | Phospho-p53 (Ser46) Antibody | W, IP, IF-IC, F | H, Mk |
| #2527 | p53 (7F5) Rabbit mAb | W, IHC-P, IF-IC, F | H, Mk |
| NEW #5429 | p53 (7F5) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, IF-P, F | H, Mk |
| NEW #4667 | p53 (7F5) Rabbit mAb (Biotinylated) | W, F | H, Mk |
| #2015 | p53 (1C12) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #2533 | p53 (1C12) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #4981 | Phospho-p63 (Ser160/162) Antibody | W, IHC-P, F | H, (M, R, C, X) |
| #4941 | Phospho-PBK/TOPK (Thr9) Antibody | W, IF-IC, F | H, M |
| #4852 | PCTAIRE 1 Antibody | W, IP, F | M, R, (H) |
| #9309 | Rb (4H1) Mouse mAb | W, IP, IHC-P, IF-IC, F | H, Mk, B, Pg |
| #2267 | RPA70 Antibody | W, IP, IF-IC, F | H, R, Mk |
| #4124 | TIF1β (C42G12) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #2648 | VCP Antibody | W, IF-IC, F | H, M, R, Mk, (X, Z, B, Pg, Sc) |
| #4936 | Wee1 Antibody | W, IP, F | H |



Phospho-Aurora A (Thr288)/Aurora B (Thr232)/Aurora C (Thr198) (D13A11) XP™ Rabbit mAb #2914: Flow cytometric analysis of Jurkat cells using #2914 compared to propidium iodide (DNA content). The boxed population indicates phospho-Aurora A (Thr288)/Aurora B (Thr232)/Aurora C (Thr198)-positive cells.



p21 Waf1/Cip1 (12D1) Rabbit mAb (Alexa Fluor® 488 Conjugate) #5487: Flow cytometric analysis of COS-7 cells using #5487. Red=positive cells.

Chromatin and Epigenetic Regulation

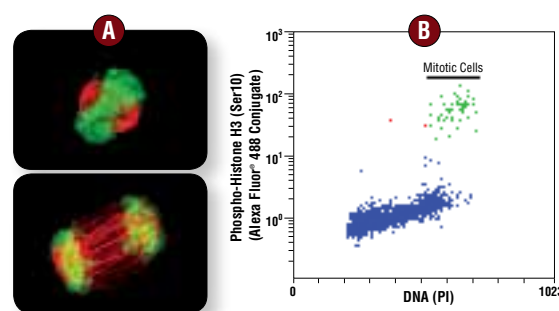
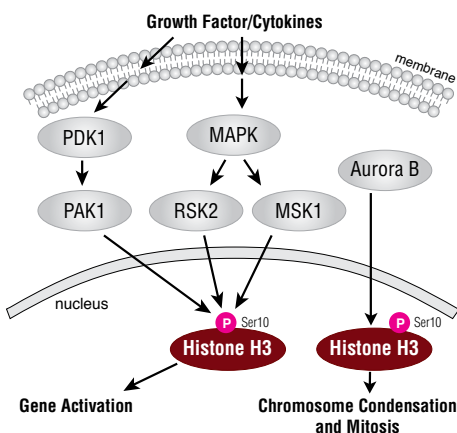
| | Applications | Reactivity |
|---|-------------------------------|--------------------------------|
| #9718 Phospho-Histone H2A.X (Ser139) (20E3) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #9719 Phospho-Histone H2A.X (Ser139) (20E3) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #9720 Phospho-Histone H2A.X (Ser139) (20E3) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #2577 Phospho-Histone H2A.X (Ser139) Antibody | W, IHC-P, IF-IC, F | H, M, R |
| NEW #5438 Phospho-Histone H2A.X (Ser139/Tyr142) Antibody | W, IP, IF-IC, F | H, M, R, Mk |
| #3377 Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb | XP IF-IC, F | H, M, R, Mk, Z |
| #3465 Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) | XP CA IF-IC, F | H, M, R, Mk, Z |
| #3458 Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | XP CA IF-IC, F | H, M, R, Mk, Z |
| NEW #5764 Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb (PE Conjugate) | XP CA F | H, M, R, Mk, Z |
| #3642 Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb (Biotinylated) | XP W, IF-F, IF-IC, F | H, M, R, Mk |
| #9701 Phospho-Histone H3 (Ser10) Antibody | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk, C, Dm, Z, Sc, (X) |
| #9708 Phospho-Histone H3 (Ser10) Antibody (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, (X) |
| #9716 Phospho-Histone H3 (Ser10) Antibody (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #9706 Phospho-Histone H3 (Ser10) (6G3) Mouse mAb | W, IF-F, IF-IC, F | H, M, R |
| #9767 Phospho-Histone H3 (Thr11) (C2A6) Rabbit mAb | W, IP, F | H, M, R, (X) |
| #9764 Phospho-Histone H3 (Thr11) Antibody | W, IP, IF-IC, F | H, M, R, (X) |
| #9713 Phospho-Histone H3 (Ser28) Antibody | W, IP, IF-F, IF-IC, F | H, M, Hm, Dm, (R, C, X, Z, B) |
| #9649 Acetyl-Histone H3 (Lys9) (C5B11) Rabbit mAb | W, IHC-P, IF-IC, F, CHIP | H, M, R, Mk, Z, (Sc) |
| #9683 Acetyl-Histone H3 (Lys9) (C5B11) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, Z, (R, Mk) |
| NEW #4484 Acetyl-Histone H3 (Lys9) (C5B11) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, Z, (R, Mk) |
| #2591 Acetyl-Histone H4 (Lys12) Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #9304 hnRNP A2/B1 (2A2) Mouse mAb | W, F | H, Mk |
| #2616 HP1α Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, (B) |
| #2619 HP1γ Antibody | W, IP, IF-IC, F | H, M, R, Mk |
| #2139 LSD1 Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| #2314 Phospho-SirT1 (Ser47) Antibody | W, IP, IF-IC, F | H |
| #4733 Topoisomerase IIα Antibody | W, IP, F | H, M, R, Mk |

Histone H3

Histone H3 is one of the core histone proteins composing the nucleosome. The amino-terminal tails of core histones undergo various post-translational modifications, including acetylation, methylation, ubiquitination, and phosphorylation. Phosphorylation of histone H3 can occur at several sites, including: Ser10, Ser28, and Thr11. Growth factor and cytokine signaling through PAK1 and RSK2 can lead to Ser10 phosphorylation and gene activation. Signaling through the cell cycle-regulated Aurora B kinase can also lead to Ser10 phosphorylation, which is tightly correlated with chromosome condensation during both mitosis and meiosis.

Application References:

Phospho-Histone H3 (Ser10) (6G3) Mouse mAb #9706: Cortez, D. et al. (2001) ATR and ATRIP: partners in checkpoint signaling. *Science* 294, 1713–1716.

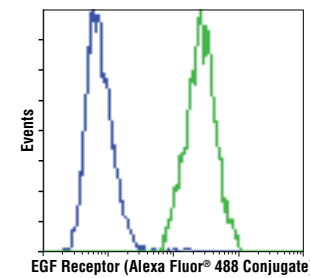
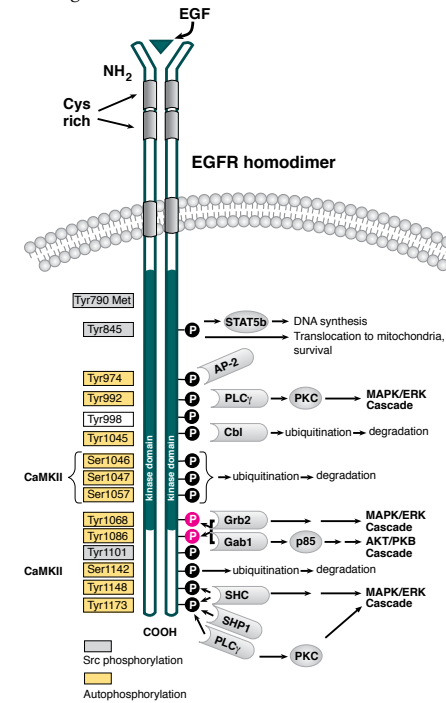


Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) #3465: Confocal IF analysis of HeLa cells (A) using #3465 (green) and β-Tubulin (9F3) Rabbit mAb (Alexa Fluor® 555 Conjugate) #2116 (red). Flow cytometric analysis of Jurkat cells (B) using #3465 compared to propidium iodide (DNA content). The box indicates phospho-histone H3-positive cells.

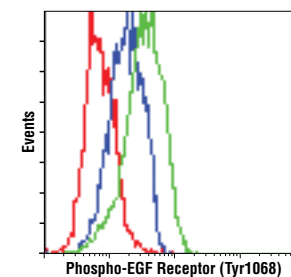
Tyrosine Kinases

EGFR

The epidermal growth factor receptor (EGFR) is a 170 kDa transmembrane tyrosine kinase that belongs to the HER/ErbB protein family. Ligand binding results in receptor dimerization, autophosphorylation, and activation of MAPK and Akt downstream signaling cascades, leading to cell growth, proliferation, and survival. Phosphorylation of EGFR at specific serine and threonine residues as well as Tyr1045 attenuates EGFR kinase activity through receptor ubiquitination and degradation.



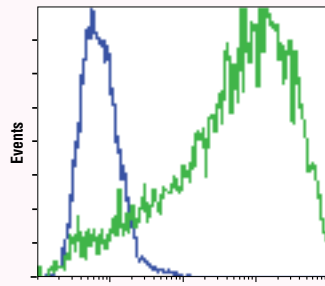
EGF Receptor (D38B1) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) #5616: Flow cytometric analysis of Jurkat cells (blue) and HeLa cells (green) using #5616.



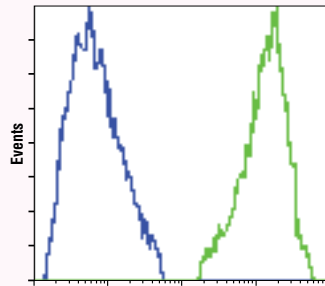
Phospho-EGF Receptor (Tyr1068) (D7A5) XP™ Rabbit mAb #3777: Flow cytometric analysis of A549 cells, untreated (blue) or treated with hEGF #8916 (green), using #3777 compared to concentration matched Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900 (red).

| | Applications | Reactivity |
|---|-------------------------------------|-----------------------------|
| #4566 Axl (C44G1) Rabbit mAb | W, IP, F | H, Mk |
| #3901 Phospho-Bcr (Tyr177) Antibody | W, IHC-P, F | H, M |
| #3902 Bcr Antibody | W, IF-IC, F | H, M, R, Pg |
| #3181 Phospho-CrkL (Tyr207) Antibody | W, IP, IHC-P, F | H, M, R, Mk |
| #3155 Phospho-M-CSF Receptor (Tyr723) (49C10) Rabbit mAb | W, IP, IHC-P, F | H, M |
| NEW #3777 Phospho-EGF Receptor (Tyr1068) (D7A5) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H, M, R, Mk |
| #2085 EGF Receptor (E746-A750del Specific) (6B6) XP™ Rabbit mAb | XP W, IP, IHC-P, IF-IC, IF-P, F | H |
| #3197 EGF Receptor (L858R Mutant Specific) (43B2) Rabbit mAb | W, IP, IHC-P, IF-IC, IF-P, F | H |
| #4267 EGF Receptor (D38B1) XP™ Rabbit mAb | XP W, IP, IHC-P, IF-IC, F | H, M, Mk |
| NEW #5616 EGF Receptor (D38B1) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) | XP CA IF-IC, F | H, M, Mk |
| NEW #5588 EGF Receptor (D38B1) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | XP CA IF-IC, F | H, M, Mk |
| #3283 Phospho-FAK (Tyr397) Antibody | W, IF-IC, F | H, M, R, Hm, Pg |
| #2736 Fes Antibody | W, IP, F | H |
| #2755 Fgr Antibody | W, IP, F | H |
| #2165 HER2/ErbB2 (29D8) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-IC, F | H, (M, R) |
| #3308 c-Kit (Ab81) Mouse mAb | W, IP, IF-IC, F | H |
| #3310 c-Kit (Ab81) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H |
| NEW #5631 Met (11C4) Mouse mAb (Flow Specific) | F | H |
| NEW #5241 PDGF Receptor α (D13C6) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H |
| #3174 PDGF Receptor α (D1E1E) XP™ Rabbit mAb | XP W, IP, IHC-P, IF-IC, F | H, M |
| #3164 PDGF Receptor α Antibody | W, IP, IHC-P, F | H, M, R |
| #3161 Phospho-PDGFR β (Tyr751) Antibody | W, F | H, M, R |
| #4564 PDGF Receptor β (C82A3) Rabbit mAb | W, IHC-P, F | H, M, R |
| #3223 Ret (C31B4) Rabbit mAb | W, IP, IF-IC, F | H |
| #2093 SCF (C19H6) Rabbit mAb | W, IHC-P, F | H |
| #2109 Src (36D10) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-F, IF-IC, F | H, M, R, Hm, Mk, B, Pg, (C) |
| #2108 Src Antibody | W, IP, IHC-P, IF-F, IF-IC, F | H, M, R, Mk, (C) |
| #2479 VEGF Receptor 2 (55B11) Rabbit mAb | W, IP, IHC-P, IF-F, IF-IC, F | H, M |
| #3627 VEGF Receptor 2 (55B11) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M |
| #3628 VEGF Receptor 2 (55B11) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M |

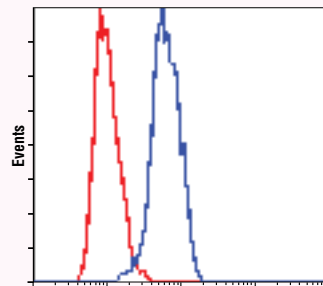
Stem Cell Markers, Development, and Differentiation



SSEA4 (MC813) Mouse mAb (Alexa Fluor® 647 Conjugate) #5836: Flow cytometric analysis of unpermeabilized Jurkat cells (blue) and NTERA-2 cells (green) using #5836.



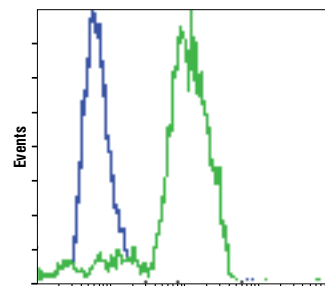
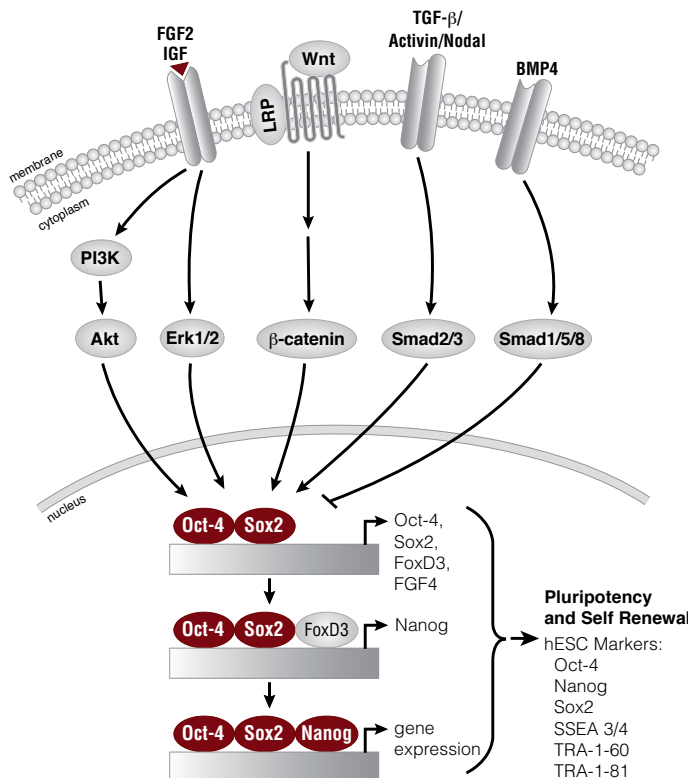
TRA-1-60(S) (TRA-1-60(S)) Mouse mAb #4746: Flow cytometric analysis of unpermeabilized Jurkat cells (blue) and unpermeabilized NTERA-2 cells (green) using #4746.



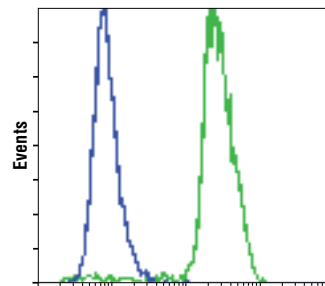
FoxP1 (D35D10) XP™ Rabbit mAb #4402: Flow cytometric analysis of MOLT-4 cells using #4402 (blue) compared to a nonspecific negative control antibody (red).

Pluripotency in Human Embryonic Stem Cells

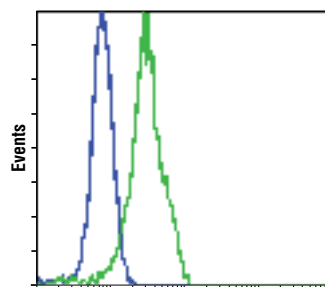
The predominant signaling pathways involved in human embryonic stem cell (ESC) pluripotency and self renewal are TGF- β , which signals through Smad2/3, and FGFR, which activates the MAPK and Akt pathways. The Wnt pathway also promotes pluripotency through activation of β -catenin. Signaling through these pathways results in the expression and activation of three key transcription factors: Oct-4, Sox2, and Nanog. These transcription factors activate gene expression of ESC-specific genes, regulate their own expression, and also serve as human ESC markers.



Oct-4A (C30A3) Rabbit mAb (Alexa Fluor® 488 Conjugate) #5177: Flow cytometric analysis of HeLa cells (blue) and NTERA-2 cells (green) using #5177.

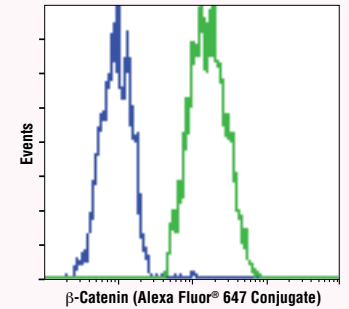


Sox2 (D6D9) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #5067: Flow cytometric analysis of HeLa cells (blue) and NTERA-2 cells (green) using #5067.

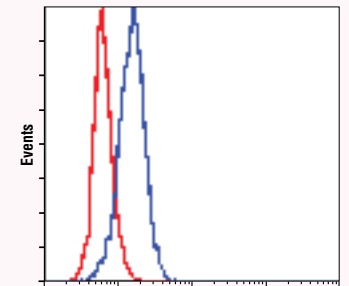


Nanog (D73G4) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #5448: Flow cytometric analysis of HeLa cells (blue) and NTERA-2 cells (green) using #5448.

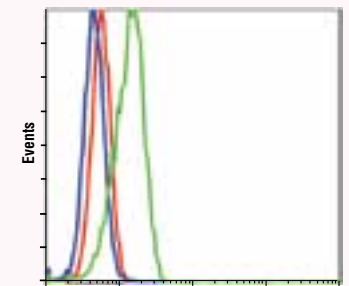
| | | Applications | Reactivity |
|-----------|---|------------------------------------|--------------------------------|
| #3354 | CACYBP Antibody | W, IHC-P, F | H, M, R, Mk |
| #9587 | β -Catenin Antibody (Carboxy-terminal Antigen) | W, IP, IHC-P, IHC-F, IF-F, F, ChIP | H, M, R, Mk, (C, X, B, Dg, Pg) |
| #2677 | β -Catenin (L54E2) Mouse mAb (IF Preferred) | IP, IF-IC, F | H, (M, R, Mk, Pg) |
| #2849 | β -Catenin (L54E2) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, (M, R, Mk, Pg) |
| NEW #4627 | β -Catenin (L54E2) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, (M, R, Mk, Pg) |
| NEW #5265 | β -Catenin (L54E2) Mouse mAb (Biotinylated) | F | H |
| #3977 | Cdx2 Antibody | W, IP, IHC-P, IF-IC, F | H, M, R |
| NEW #4402 | FoxP1 (D35D10) XP™ Rabbit mAb | XP W, IP, IHC-P, F | H, M, R, Mk |
| #2005 | FoxP1 Antibody | W, IP, IHC-P, IF-IC, F | H, M, (R) |
| #2230 | LEF1 (C12A5) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R |
| #2286 | LEF1 (C18A7) Rabbit mAb | W, IP, F | H, M |
| #3695 | LIN28A (D84C11) XP™ Rabbit mAb | XP W, IF-IC, F | H, (R, Mk) |
| #3978 | LIN28A (A177) Antibody | W, IP, IHC-P, IF-IC, F | H, M, (Mk) |
| #3580 | Nanog Antibody | W, IF-IC, F, ChIP | H |
| NEW #4380 | Notch1 (D6F11) XP™ Rabbit mAb | XP W, IF-IC, F | H, M, R |
| NEW #5732 | Notch2 (D76A6) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, M, R |
| #2756 | Numb (C29G11) Rabbit mAb | W, IP, IF-IC, F | H, M, R, Mk |
| #2761 | Numb (C44B4) Rabbit mAb | W, IP, IF-IC, F | H |
| #2840 | Oct-4A (C30A3) Rabbit mAb | W, IF-IC, F | H, M |
| NEW #5177 | Oct-4A (C30A3) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M |
| NEW #5263 | Oct-4A (C30A3) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M |
| #2890 | Oct-4A (C52G3) Rabbit mAb | W, IHC-P, IF-IC, F, ChIP | H |
| #2750 | Oct-4 Antibody | W, IHC-P, IF-IC, F, ChIP | H |
| #9516 | Phospho-Smad1/5 (Ser463/465) (41D10) Rabbit mAb | W, IF-IC, F | H, M, R |
| #9511 | Phospho-Smad1 (Ser463/465)/Smad5 (Ser463/465)/Smad8 (Ser426/428) Antibody | W, IP, F, ChIP | H, M, R, Mi, X |
| NEW #6944 | Smad1 (D59F7) XP™ Rabbit mAb | XP W, IP, IF-IC, F, ChIP | H, M, (Mk, X, B) |
| #9510 | Phospho-Smad2 (Ser465/467)/Smad3 (Ser423/425) (D6G10) XP™ Rabbit mAb | XP IF-IC, F | H |
| NEW #5339 | Smad2 (D43B4) XP™ Rabbit mAb | XP W, IP, IF-IC, F, ChIP | H, M, R, Mk |
| NEW #5678 | Smad2/3 Antibody | W, IP, IF-IC, F, ChIP | H, M, R, Mk |
| #9523 | Smad3 (C67H9) Rabbit mAb | W, IP, IF-IC, F, ChIP | H, M, R, Mk, (X, Z, B) |
| NEW #3579 | Sox2 (D6D9) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H, (Mk, B, Dg) |
| NEW #5049 | Sox2 (D6D9) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) | XP CA IF-IC, F | H, (Mk, B, Dg) |
| NEW #5067 | Sox2 (D6D9) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | XP CA IF-IC, F | H, (Mk, B, Dg) |
| NEW #4900 | Sox2 (L1D6A2) Mouse mAb | W, IF-IC, F | H, M, (R, B, Dg) |
| #4744 | SSEA1 (MC480) Mouse mAb | IHC-P, IF-IC, F | M |
| NEW #5836 | SSEA4 (MC813) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H |
| #2203 | TCF1 (C63D9) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M |
| #4746 | TRA-1-60(S) (TRA-1-60(S)) Mouse mAb | W, IHC-P, IF-IC, F | H |
| #4745 | TRA-1-81 (TRA-1-81) Mouse mAb | IHC-P, IF-IC, F | H |
| NEW #4903 | Nanog (D73G4) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H, (Mk) |
| NEW #5448 | Nanog (D73G4) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | XP CA IF-IC, F | H, (Mk) |
| #4893 | Nanog (1E6C4) Mouse mAb | W, IHC-P, IF-IC, F | H |



β -Catenin (L54E2) Mouse mAb (Alexa Fluor® 647 Conjugate) #4627: Flow cytometric analysis of NCI-H28 cells (blue) and HeLa cells (green) using #4627.

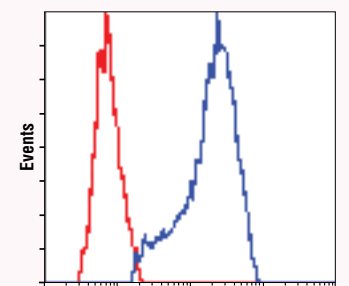


Notch1 (D6F11) XP™ Rabbit mAb #4380: Flow cytometric analysis of Jurkat cells using #4380 (blue) compared to concentration matched Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900 (red).



Phospho-Smad1 (Ser463/465)/Smad5 (Ser463/465)/Smad8 (Ser426/428) Antibody #9511: Flow cytometric analysis of HeLa cells, untreated (blue) or BMP-treated (green), using #9511 compared to a nonspecific negative control antibody (red).

Phospho-Smad1 (Ser463/465)/Smad5 (Ser463/465)/Smad8 (Ser426/428) Antibody #9511: Flow cytometric analysis of HeLa cells, untreated (blue) or BMP-treated (green), using #9511 compared to a nonspecific negative control antibody (red).

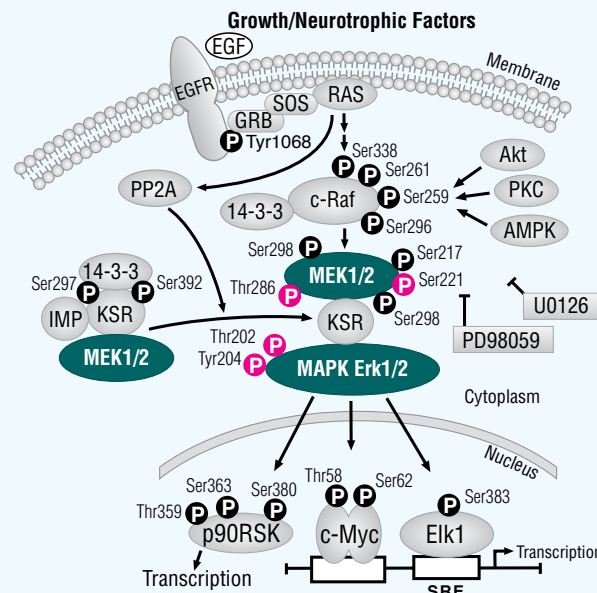


Smad2 (D43B4) XP™ Rabbit mAb #5339: Flow cytometric analysis of HeLa cells using #5339 (blue) compared to a nonspecific negative control antibody (red).

MAP Kinase Signaling

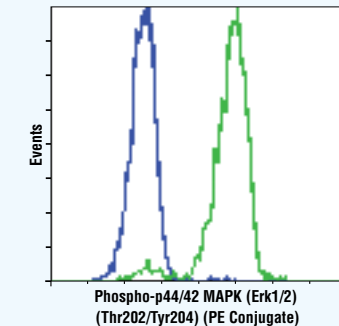
| | | Applications | Reactivity |
|-----------|--|-------------------------------|--|
| #5112 | Phospho-ATF-2 (Thr71) (11G2) Rabbit mAb | W, F | H, M, R, Mk |
| #9221 | Phospho-ATF-2 (Thr71) Antibody | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk |
| #4067 | ERK3 Antibody | W, IP, F | H, M, R, Mk |
| NEW #5122 | FAM129B Antibody | W, IP, IF-IC, F | H, Mk |
| NEW #5348 | Phospho-c-Fos (Ser32) (D82C12) XP™ Rabbit mAb | W, IP, IF-IC, F | H, M, R, (Hm, Mk, B, Pg) |
| #2250 | c-Fos (9F6) Rabbit mAb | W, IF-IC, F | H, M, R, (Hm, B, Pg) |
| #2251 | FosB (5G4) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R |
| #2023 | FosB (5G4) Rabbit mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R |
| #9261 | Phospho-c-Jun (Ser63) II Antibody | W, IP, IF-IC, F | H, M, R, Mk, Pg |
| #3270 | Phospho-c-Jun (Ser73) (D47G9) XP™ Rabbit mAb | W, IP, IF-IC, F | H, M, R, Mk |
| #4511 | Phospho-p38 MAPK (Thr180/Tyr182) (D3F9) XP™ Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, Sc, (Hm, C, Z, B, Pg) |
| #9215 | Phospho-p38 MAPK (Thr180/Tyr182) (3D7) Rabbit mAb | W, IF-IC, F | H, M, R, Mk, Dm, Pg, Sc, (Hm, Mi, Z, B) |
| NEW #6908 | Phospho-p38 MAPK (Thr180/Tyr182) (3D7) Rabbit mAb (PE Conjugate) | F | H, M, R, Mk, Dm, Pg, Sc |
| #4092 | Phospho-p38 MAPK (Thr180/Tyr182) (3D7) Rabbit mAb (Biotinylated) | W, F | H, M, R, Mk, Dm, Pg, Sc |
| #9216 | Phospho-p38 MAPK (Thr180/Tyr182) (28B10) Mouse mAb | W, IP, IF-IC, F | H, M, R, Mk, Sc, (Z) |
| #4551 | Phospho-p38 MAPK (Thr180/Tyr182) (28B10) Mouse mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R, Mk, Sc, (Z) |
| #4552 | Phospho-p38 MAPK (Thr180/Tyr182) (28B10) Mouse mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Mk, Sc, (Z) |
| #9211 | Phospho-p38 MAPK (Thr180/Tyr182) Antibody | W, IP, IF-IC, F | H, M, R, Mk, Dm, Pg, Sc, (Hm, Z, B) |
| #9228 | p38α MAPK (L53F8) Mouse mAb | W, IF-IC, F | H, M, R, Mk, Sc |
| #9212 | p38 MAPK Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk, (C) |
| #4370 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Dg, Pg, Sc |
| #4344 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg |
| #4284 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg |
| #4094 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (Biotinylated) | W, F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg, Sc |
| NEW #5682 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (PE Conjugate) | F | H, M, R, Mk, Mi, Dm, Z, B, Dg, Pg, Sc |
| #4377 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (197G2) Rabbit mAb | W, IF-IC, F | H, M, R, Mk, Mi, Dm, Z, Pg |
| #9106 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb | W, IP, IF-IC, F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg |
| #4374 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg |
| #4375 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg |
| #9101 | Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) Antibody | W, IP, IF-IC, F | H, M, R, Hm, Mk, C, Mi, Dm, Z, B, Pg |
| #4695 | p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Dg, Pg, Sc, (C) |
| #4780 | p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg, Sc |
| #5376 | p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Hm, Mk, Mi, Dm, Z, B, Pg, Sc |
| #5013 | p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb (Biotinylated) | W, IP, F | H, M, R, Mk, Mi, Dm, Z, B, Pg, Sc |
| #4696 | p44/42 MAPK (Erk1/2) (L34F12) Mouse mAb | W, IHC-P, IF-IC, F | H, M, R, Mk, Mi, Z, Pg |
| #9102 | p44/42 MAPK (Erk1/2) Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Hm, Mk, Mi, Z, B, Pg, Sc |
| #3042 | MAPKAPK-2 Antibody | W, F | H, M, R, Mk, (Hm) |
| #3007 | Phospho-MAPKAPK-2 (Thr334) (27B7) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #4338 | Phospho-MAPKAPK-2 (Thr334) (27B7) Rabbit mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R, Mk |
| #4320 | Phospho-MAPKAPK-2 (Thr334) (27B7) Rabbit mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Mk |
| NEW #4660 | Phospho-MEK1/2 (Ser217/221) (41G9) Rabbit mAb (Alexa Fluor® 488 Conjugate) | F | H, M, R, Mk, Dm, (C) |
| NEW #5068 | Phospho-MEK1/2 (Ser217/221) (41G9) Rabbit mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Mk, Dm, (C) |

| | | Applications | Reactivity |
|-----------|--|--------------------|------------------------|
| #2338 | Phospho-MEK1/2 (Ser221) (166F8) Rabbit mAb | W, IHC-P, F | H, M, R, Mk, (Dg) |
| #9127 | Phospho-MEK1 (Thr286) Antibody | W, IP, IF-IC, F | H, R, Mk, (M) |
| #4694 | MEK1/2 (L38C12) Mouse mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #9434 | B-Raf (L12G7) Mouse mAb | W, IP, F | H, M, R, Mk, Dm |
| #9255 | Phospho-SAPK/JNK (Thr183/Tyr185) (G9) Mouse mAb | W, IP, IF-IC, F | H, M, R, Hm, Sc |
| #9257 | Phospho-SAPK/JNK (Thr183/Tyr185) (G9) Mouse mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Hm, Sc |
| NEW #5755 | Phospho-SAPK/JNK (Thr183/Tyr185) (G9) Mouse mAb (PE Conjugate) | F | H, M, R, Hm, Sc |
| #4514 | Phospho-SEK1/MKK4 (Ser257) (C36C11) Rabbit mAb | W, F | H, M, R, Mk |
| #3225 | TAB1 Antibody | W, IF-IC, F | H, M, R, Mk |
| #4505 | TAK1 Antibody | W, F | H, M, R, Mk, B, (C, X) |

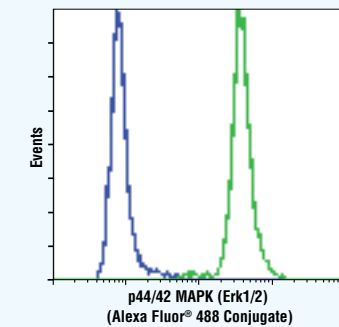


Application References:

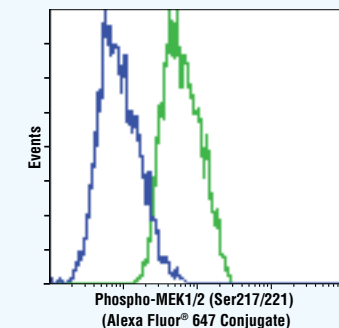
- Phospho-c-Jun (Ser63) II Antibody #9261 and Phospho-p38 MAPK (Thr180/Tyr182) Antibody #9211:** Perez, O.D. et al. (2003) Leukocyte functional antigen 1 lowers T cell activation thresholds and signaling through cytohesin-1 and Jun-activating binding protein 1. *Nat. Immunol.* 4, 1083–1092.
- Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) Antibody #9101, Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb (Alexa Fluor® 488 Conjugate) #4374, Phospho-SAPK/JNK (Thr183/Tyr185) (G9) Mouse mAb (Alexa Fluor® 647 Conjugate) #9257:** Grammer, A.C. et al. (2004) Flow cytometric assessment of the signaling status of human B lymphocytes from normal and autoimmune individuals. *Arthritis Res. Ther.* 6, 28–38.
- Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb #9106:** Feinerman, O. et al. (2008) Variability and robustness in T cell activation from regulated heterogeneity in protein levels. *Science* 321, 1081–1084. / Chow, S. et al. (2005) Whole blood fixation and permeabilization protocol with red blood cell lysis for flow cytometry of intracellular phosphorylated epitopes in leukocyte subpopulations. *Cytometry A* 67, 4–17. / Perez, O.D. et al. (2003) Leukocyte functional antigen 1 lowers T cell activation thresholds and signaling through cytohesin-1 and Jun-activating binding protein 1. *Nat. Immunol.* 4, 1083–1092.
- Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb #4370:** Koenigsmann, J. et al. (2009) N1 haploinsufficiency and Icsbp deficiency synergize in the development of leukemias. *Blood* 113, 4690–4701.
- Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (197G2) Rabbit mAb #4377:** Deane, J.A. et al. (2007) T-cell function is partially maintained in the absence of class IA phosphoinositide 3-kinase signaling. *Blood* 109, 2894–2902. / Tramont, P. et al. (2006) ShcA mediates the dominant pathway to extracellular signal-regulated kinase activation during early thymic development. *Mol. Cell Biol.* 26, 9035–9044. / Gross, A.J. et al. (2009) Developmental acquisition of the Lyn-CD22-SHP-1 inhibitory pathway promotes B cell tolerance. *J. Immunol.* 182, 5382–5392.
- Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) Antibody #9101:** Chow, S. et al. (2001) Measurement of MAP kinase activation by flow cytometry using phospho-specific antibodies to MEK and ERK: potential for pharmacodynamic monitoring of signal transduction inhibitors. *Cytometry* 46, 72–78.
- Phospho-SAPK/JNK (Thr183/Tyr185) Antibody #9251:** Weiss, L. et al. (2000) Regulation of c-Jun NH2-terminal kinase (Jnk) gene expression during T cell activation. *J. Exp. Med.* 191, 139–146.



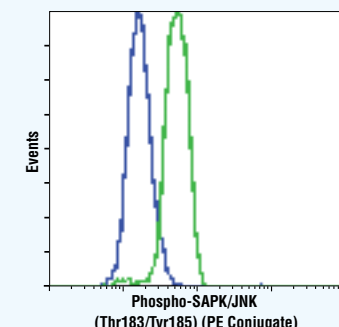
Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (D13.14.4E) XP™ Rabbit mAb (PE Conjugate) #5682: Flow cytometric analysis of Jurkat cells, treated with U0126 #9903 (blue) or with TPA #4174 (green), using #5682.



p44/42 MAPK (Erk1/2) (137F5) Rabbit mAb (Alexa Fluor® 488 Conjugate) #4780: Flow cytometric analysis of Jurkat cells using #4780 (green) compared to Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 488 Conjugate) #2975 (blue).

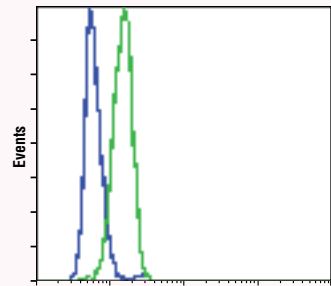


Phospho-MEK1/2 (Ser217/221) (41G9) Rabbit mAb (Alexa Fluor® 647 Conjugate) #5068: Flow cytometric analysis of Jurkat cells, treated with U0126 (MEK1/2 Inhibitor) #9903 (blue) or TPA #4174 (green), using #5068.

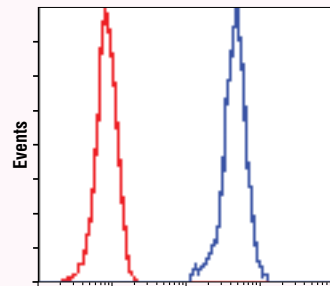


Phospho-SAPK/JNK (Thr183/Tyr185) (G9) Mouse mAb (PE Conjugate) #5755: Flow cytometric analysis of THP-1 cells, untreated (blue) or anisomycin-treated (green), using #5755.

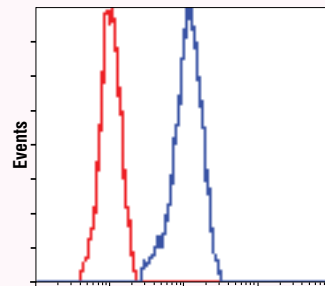
Translational Control



Phospho-4E-BP1 (Thr37/46) (Alexa Fluor® 488 Conjugate) #2846: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9951, and U0126 #9903 (blue), using #2846.



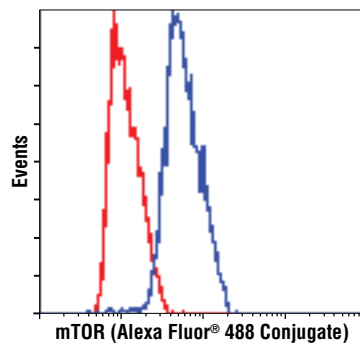
eIF4G2/p97 (D88B6) XP™ Rabbit mAb #5169: Flow cytometric analysis of HeLa cells using #5169 (blue) compared to Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900 (red).



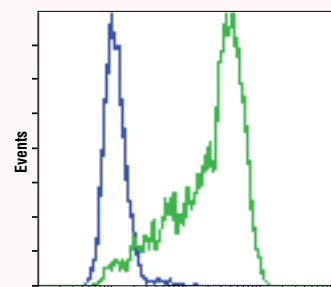
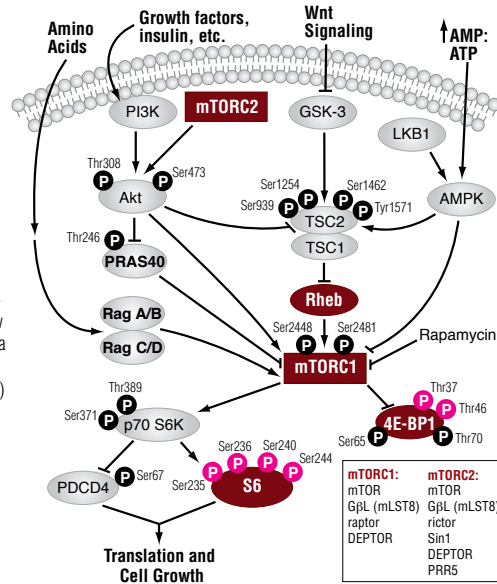
RagC (D8H5) Rabbit mAb #9480: Flow cytometric analysis of HeLa cells using #9480 (blue) compared to a nonspecific negative control antibody (red).

mTOR

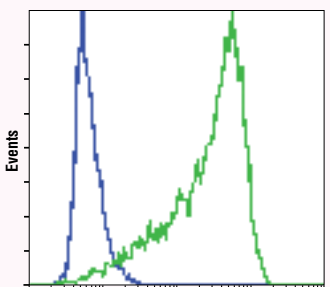
The kinase mTOR (mammalian target of rapamycin) is considered to be a master regulator of protein synthesis. When sufficient nutrients are available, mTOR activates p70 S6 kinase, which in turn phosphorylates S6 ribosomal protein. mTOR also participates in the inactivation of the eIF4E inhibitor 4E-BP1. Together, these events result in the increased translation of specific mRNA subpopulations.



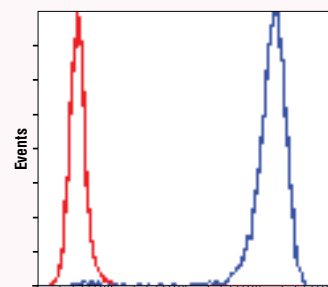
mTOR (7C10) Rabbit mAb (Alexa Fluor® 488 Conjugate) #5043: Flow cytometric analysis of HeLa cells using #5043 (blue) compared to Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 488 Conjugate) #2975 (red).



Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) #4851: Flow cytometric analysis of K-562 cells, untreated (green) or imatinib-treated (blue), using #4851.



Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) #5018: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9951, and U0126 #9903 (blue), using #5018.



S6 Ribosomal Protein (54D2) Mouse mAb (Alexa Fluor® 488 Conjugate) #5317: Flow cytometric analysis of Jurkat cells using #5317 (blue) compared to Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor® 488 Conjugate) #4878 (red).

Application References:

Phospho-S6 Ribosomal Protein (Ser235/236) (2F9) Rabbit mAb #4856: Kotecha, N. et al. (2008) Single-cell profiling identifies aberrant STAT5 activation in myeloid malignancies with specific clinical and biologic correlates. *Cancer Cell* 14, 335–343.

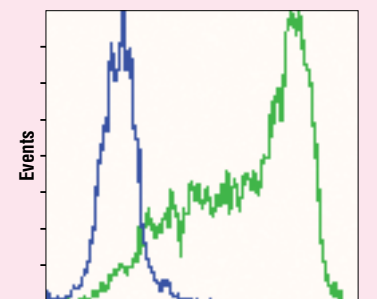
| | Applications | Reactivity |
|---|-------------------------------|-------------------------|
| #2855 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk, Dm |
| #2846 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (Alexa Fluor® 488 Conjugate) CA | F | H, M, R, Mk |
| #5123 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (Alexa Fluor® 647 Conjugate) CA | F | H, M, R, Mk |
| #3929 Phospho-4E-BP1 (Thr37/46) (236B4) Rabbit mAb (Biotinylated) | W, F | H, M, R, Mk, Dm |
| #9644 4E-BP1 (53H11) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| #4923 Nonphospho-4E-BP1 (Thr46) (87D12) Rabbit mAb | W, F | H, M, R, Mk |
| #2845 4E-BP2 Antibody | W, IP, IHC-P, F | H, M, R, Mk, B |
| #2119 BRF1/2 Antibody | W, IF-IC, F | H, M, R, Mk, (C, B) |
| NEW #9407 DDX6/RCK Antibody | W, IF-IC, F | H, M, R, Mk |
| #2469 eIF4G (C45A4) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #2498 eIF4G Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk |
| NEW #5169 eIF4G2/p97 (D88B6) XP™ Rabbit mAb XP | W, IP, IF-IC, F | H, M, R, Mk |
| NEW #5033 ERp72 (D70D12) XP™ Rabbit mAb XP | W, IF-IC, F | H, M, R, Mk |
| NEW #4675 hnRNP K (R332) Antibody | W, IP, IF-IC, F | H, M, R, Mk |
| NEW #2983 mTOR (7C10) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| NEW #5043 mTOR (7C10) Rabbit mAb (Alexa Fluor® 488 Conjugate) CA | F | H, M, R, Mk |
| NEW #9480 RagC (D8H5) Rabbit mAb | W, IP, IF-IC, F | H, M, R, Mk |
| #4935 Rheb Antibody | W, IHC-P, F | H, M, R, Dm, Sc, (B) |
| #4858 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) XP | W, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk, Sc |
| #4803 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) XP CA | IF-IC, F | H, M, R, Mk, Sc |
| #4851 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) XP CA | IF-IC, IF-P, F | H, M, R, Mk, Sc |
| #3945 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (Biotinylated) XP | W, F | H, M, R, Mk, Sc |
| NEW #5316 Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (PE Conjugate) XP CA | F | H, M, R, Mk, Sc |
| #4856 Phospho-S6 Ribosomal Protein (Ser235/236) (2F9) Rabbit mAb | W, IF-IC, F | H, M, R |
| #4854 Phospho-S6 Ribosomal Protein (Ser235/236) (2F9) Rabbit mAb (Alexa Fluor® 488 Conjugate) CA | IF-F, IF-IC, F | H, M, R |
| #2211 Phospho-S6 Ribosomal Protein (Ser235/236) Antibody | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk, Sc, (C, X) |
| NEW #5364 Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP™ Rabbit mAb XP | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| NEW #5018 Phospho-S6 Ribosomal Protein (Ser240/244) (D68F8) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) XP CA | IF-IC, F | H, M, R, Mk |
| #4838 Phospho-S6 Ribosomal Protein (Ser240/244) (61H9) Rabbit mAb | W, IF-IC, F | H, M, R, Mk |
| NEW #4278 Phospho-S6 Ribosomal Protein (Ser240/244) (61H9) Rabbit mAb (Biotinylated) | W, F | H, M, R, Mk |
| #2317 S6 Ribosomal Protein (54D2) Mouse mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, Dm |
| NEW #5317 S6 Ribosomal Protein (54D2) Mouse mAb (Alexa Fluor® 488 Conjugate) CA | F | H, M, R, Dm |
| #3944 S6 Ribosomal Protein (54D2) Mouse mAb (Biotinylated) | W, F | H, M, R, Mk |

PE Conjugated Antibodies

R-Phycoerythrin (PE) is a red fluorescent, multi-subunit protein isolated from marine algae used extensively for conjugation of proteins. The absorbance spectrum for PE covers a broad range of excitation wavelengths, allowing excitation source flexibility while maintaining a large Stokes shift. PE excitation with the argon ion laser (488) and detection at 570 nm allows the multiplexing of PE conjugated proteins with other fluorochrome labeled proteins.

See page 6 for a complete list of PE Conjugated Antibodies or visit our website for the most up-to-date information.

Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP™ Rabbit mAb (PE Conjugate) #5316: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9951, and U0126 #9903 (blue), using #5316.



Phospho-S6 Ribosomal Protein (Ser235/236) Rabbit mAb (PE Conjugate) #5316: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9951, and U0126 #9903 (blue), using #5316.

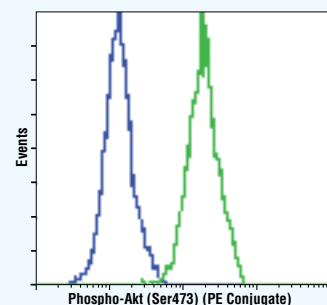
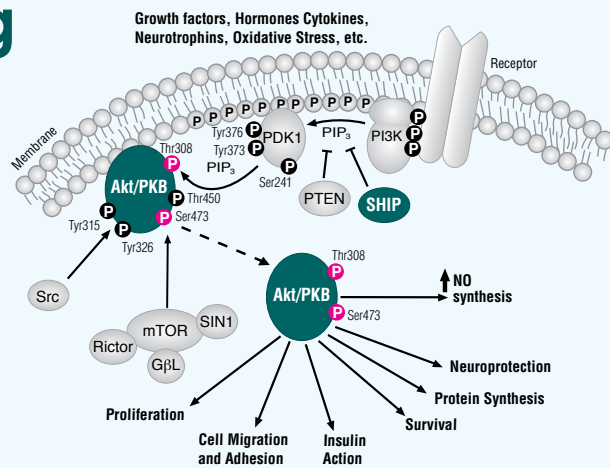
PI3K/Akt Signaling

Application References:

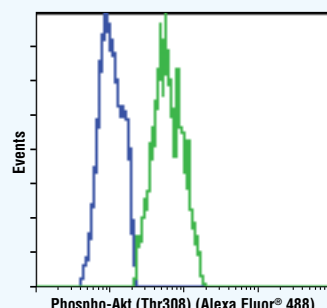
Akt (5G3) Mouse mAb #2966 and Akt Antibody #9272: Tazzari, P.L. et al. (2002) Flow cytometric detection of total and serine 473 phosphorylated Akt. *J. Cell. Biochem.* 86, 704–715.

Phospho-Akt (Ser473) Antibody #9271: Perez, O.D. et al. (2003) Leukocyte functional antigen 1 lowers T cell activation thresholds and signaling through cytohesin-1 and Jun-activating binding protein 1. *Nat. Immunol.* 4, 1083–1092. / Tazzari, P.L. et al. (2002) Flow cytometric detection of total and serine 473 phosphorylated Akt. *J. Cell. Biochem.* 86, 704–715.

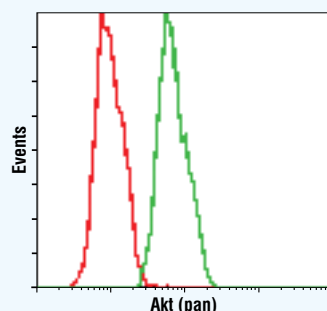
Phospho-Akt (Ser473) (193H12) Rabbit mAb #4058: Sengupta, S. et al. (2005) Adjuvant-induced survival signaling in clonally expanded T cells is associated with transient increases in pAkt levels and sustained uptake of glucose. *Immunobiology.* 210, 647–659. / Firaquay, G. and Nunes, J.A. (2009) Analysis of signaling events by dynamic phosphoflow cytometry. *Sci Signal* 2, pl3. / Radhakrishnan, S. et al. (2007) B7-DC/PD-L2 cross-linking induces NF-kappaB-dependent protection of dendritic cells from cell death. *J. Immunol.* 178, 1426–1432.



Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb (PE Conjugate) #5315: Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9551, and U0126 #9903 (blue), using #5315.



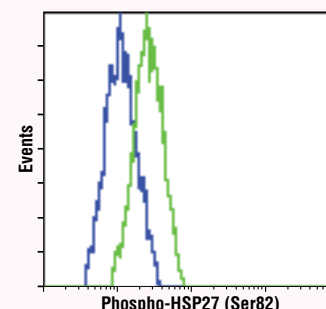
Phospho-Akt (Thr308) (C31E5E) Rabbit mAb (Alexa Fluor® 488 Conjugate) #2918: Flow cytometric analysis of NIH/3T3 cells, untreated (blue) or PDGF-treated (green), using #2918.



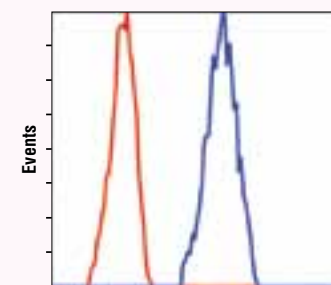
Akt (pan) (C67E7) Rabbit mAb (Alexa Fluor® 488 Conjugate) #5084: Flow cytometric analysis of Jurkat cells using #5084 (green) compared to Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 488 Conjugate) #2975 (red).

| | Applications | Reactivity |
|---|----------------------------------|---|
| #2965 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb | W, IF-IC, F | H, M, R, Hm, Mk |
| #2918 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, R, Hm, Mk |
| #3375 Phospho-Akt (Thr308) (C31E5E) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, R, Hm, Mk |
| #9275 Phospho-Akt (Thr308) Antibody | W, IP, F | H, M, R, Hm |
| #4060 Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb | XP W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg) |
| #4071 Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb (Alexa Fluor® 488 Conjugate) | XP CA F | H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg) |
| #4075 Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | XP CA F | H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg) |
| #5012 Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb (Biotinylated) | XP W, F | H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg) |
| NEW #5315 Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb (PE Conjugate) | XP CA F | H, M, R, Hm, Mk, Dm, Z, B, (C, X, Dg, Pg) |
| #4058 Phospho-Akt (Ser473) (193H12) Rabbit mAb | W, IP, IF-IC, F | H, M, R |
| #2337 Phospho-Akt (Ser473) (193H12) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, R |
| #2336 Phospho-Akt (Ser473) (193H12) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, R |
| #9271 Phospho-Akt (Ser473) Antibody | W, IP, IF-IC, F | H, M, R, Hm, Dm, B, Dg, Pg, (Mk, C, X) |
| #2966 Akt (5G3) Mouse mAb | IP, IF-IC, F | H, M, R, Hm |
| #2917 Akt (5G3) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA F | H, M, R, Hm |
| #2944 Akt (5G3) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, R, Hm |
| #9272 Akt Antibody | W, IP, IF-IC, F | H, M, R, Hm, Mk, C, Dm, B, Pg, (Dg) |
| #4685 Akt (pan) (11E7) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| #4691 Akt (pan) (C67E7) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, Dm |
| NEW #5084 Akt (pan) (C67E7) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, R, Mk, Dm |
| NEW #5186 Akt (pan) (C67E7) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA F | H, M, R, Mk, Dm |
| #2920 Akt (pan) (40D4) Mouse mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| NEW #4821 Akt (pan) (40D4) Mouse mAb (Biotinylated) | W, IP, F | H, M, R, Mk |
| #4612 CTMP Antibody | W, IP, F | H, M, R |
| #2134 DJ-1 Antibody | W, F | H, M, R |
| #4818 GSK-3α (D80D1) XP™ Rabbit mAb | XP IF-IC, F | H, M, (R) |
| NEW #5558 Phospho-GSK-3β (Ser9) (D85E12) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, M, R, Hm |
| NEW #5482 Phospho-NDRG1 (Thr346) (D98G11) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H, M, R, Mk |
| #4912 YAP Antibody | W, IP, IHC-P, F | H, M, R, Mk |

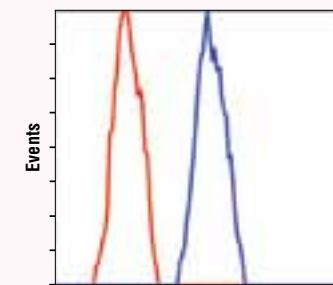
Protein Folding and Stability



Phospho-HSP27 (Ser82) Antibody II #2406: Flow cytometric analysis of HeLa cells, untreated (blue) or UV-treated (green), using #2406.



HSP70 (6B3) Rat mAb #4873: Flow cytometric analysis of HeLa cells using #4873 (blue) compared to a nonspecific negative control antibody (red).



NEDD8 (19E3) Rabbit mAb #2754: Flow cytometric analysis of HeLa cells using #2754 (blue) compared to a nonspecific negative control antibody (red).

| | Applications | Reactivity |
|--|------------------------------|--------------------------------|
| #2539 Calpain 2 Large Subunit (M-type) Antibody | W, IP, IF-F, F | H, M, R |
| #2284 Cathepsin D Antibody | W, IHC-P, F | H, Mk |
| #4356 HSF1 Antibody | W, IP, IHC-P, IF-IC, F, ChIP | H, M, R, Mk |
| #2405 Phospho-HSP27 (Ser78) Antibody | W, IHC-P, F | H, Mk |
| #2406 Phospho-HSP27 (Ser82) Antibody II | W, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk |
| #2442 HSP27 Antibody (Rodent Preferred) | W, IF-IC, F | M, R |
| #4868 HSP40 Antibody | W, IP, IF-IC, F | H, M, R, Mk |
| #4870 HSP60 (D307) Antibody | W, IF-IC, F | H, M, R, Mk, Dm |
| #4869 HSP60 (D85) Antibody | W, IF-IC, F | H, M, R, Mk, Dm |
| #4876 HSP70 (D69) Antibody | W, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk |
| #4837 HSP70 (D69) Antibody (Alexa Fluor® 488 Conjugate) | CA F | H, M, R, Mk |
| #4008 HSP70 (D69) Antibody (Alexa Fluor® 647 Conjugate) | CA F | H, M, R, Mk |
| #4873 HSP70 (6B3) Rat mAb | W, IP, IHC-P, IF-IC, F | H, Mk |
| #4877 HSP90 (C45G5) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #4875 HSP90 (E289) Antibody | W, IHC-P, F | H, M, R, Mk |
| #2743 ISG15 Antibody | W, F, E-P | H, M, Mk |
| #2740 NEDD4 Antibody | W, IF-IC, F | H, M, R, Mk |
| #2754 NEDD8 (19E3) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, (X, Z, B) |
| NEW #2745 NEDD8 Antibody | W, IP, IHC-P, F | H, M, R, Mk, (X, Z, B) |
| NEW #6960 RCAS1 Antibody | W, IP, IF-IC, F | H, M, R, Mk |
| #2156 Skp1 Antibody | W, IF-IC, F | H, M, R |
| #4997 UBC3 Antibody | W, F | H, M, R |
| #4996 UBC3B Antibody | W, IHC-P, F | H, M, R |
| #4890 UBE1a Antibody | W, IP, IHC-P, IF-IC, F | H, M, R |
| NEW #2648 VCP Antibody | W, IF-IC, F | H, M, R, Mk, (X, Z, B, Pg, Sc) |

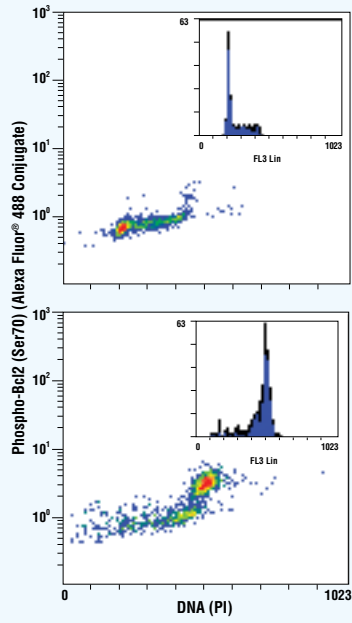
Chaperones and Related Proteins

HSP70 and HSP90 are constitutive molecular chaperones that maintain protein homeostasis and are induced upon environmental stress. Both HSP70 and HSP90 interact with unfolded proteins to prevent irreversible aggregation and catalyze the refolding of their substrates. HSP70 and HSP90 often function collaboratively in a multi-chaperone system, which requires co-chaperones HSP40, Hop, and p23.

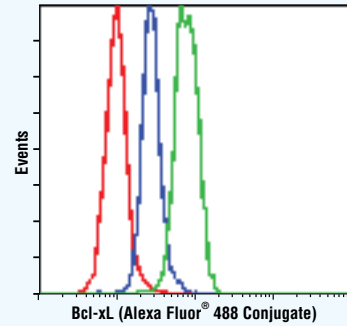
Low levels of HSP70 and HSP90 and a low Bcl-2:Bax ratio have recently been shown to be associated with apoptosis in human acute myelogenous leukemia (AML) cells in vitro and may serve as an indicator to assess patient heterogeneity in regard to therapy response.

| Name | Alternate Name | Cellular Location | Co-Chaperones | Function |
|-----------------|-----------------------|-----------------------|----------------------------|--|
| HSP40 | DnaJ, HDJ1 | cytoplasm, nucleus | | HSP70 co-chaperone |
| HSP60 | GroEL | mitochondria | Chaperonin 10/GroES | protein folding |
| HSP70 | HSPA1A, DnaK | cytoplasm, nucleus | HSP40/DnaJ, Hip, Bag1, Hop | protein folding |
| HSP90 | HSPC | cytoplasm | Cdc37, Hop | binding and stabilization of nascent polypeptide chains |
| BiP | GRP78, HSPA5 | endoplasmic reticulum | HEDJ | HSP70 family member, protein folding in ER |
| PDI | PDIA1, P4HB | endoplasmic reticulum | | catalyzes formation of disulfide bonds |
| Calnexin | CNX, IP90, p90 | endoplasmic reticulum | | mediates retention of misfolded proteins in the ER |
| HSF1 | HSTF1 | cytoplasm, nucleus | | activates heat shock protein genes following heat stress |

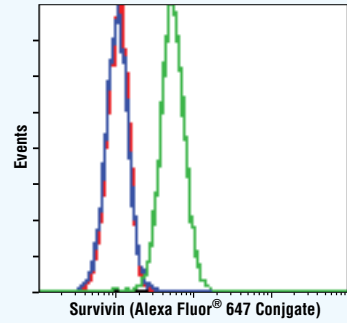
Apoptosis and Autophagy



Phospho-Bcl-2 (Ser70) (5H2) Rabbit mAb (Alexa Fluor[®] 488 Conjugate) #2834: Flow cytometric analysis of Jurkat cells, untreated (upper) or paclitaxel-treated (lower), using #2834 versus propidium iodide (DNA content). The blue inserts represent propidium iodide staining alone, showing cells in mitotic arrest in the paclitaxel-treated sample.



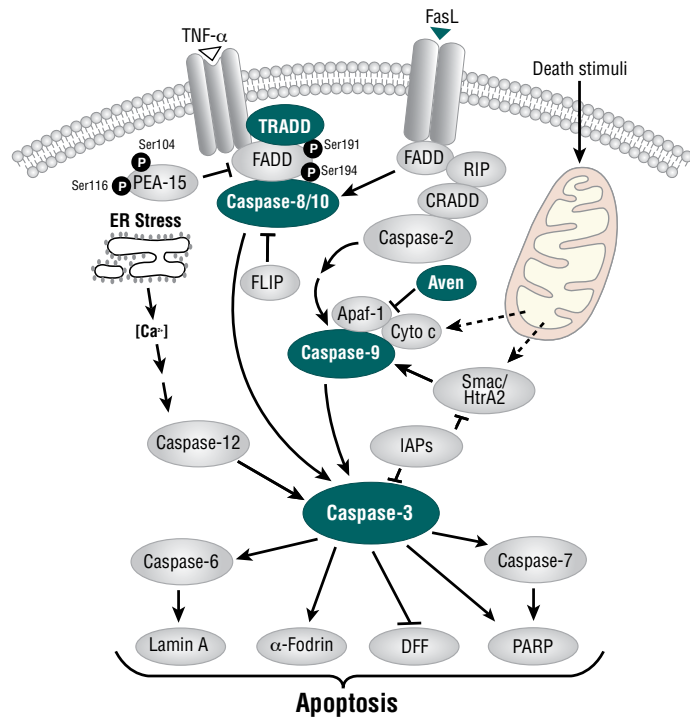
Bcl-xL (54H6) Rabbit mAb (Alexa Fluor[®] 488 Conjugate) #2767: Flow cytometric analysis of SEM (blue) and K-562 (green) cells using #2767 compared to nonspecific Rabbit IgG Isotype Control (Alexa Fluor[®] 488 Conjugate) #4340 (red).



Survivin (71G4B7) Rabbit mAb (Alexa Fluor[®] 647 Conjugate) #2866: Flow cytometric analysis of Jurkat cells, using #2866 in the absence of blocking peptide (green) or in the presence of Survivin Blocking Peptide #1037 (blue), compared to a nonspecific control antibody #3452 (red).

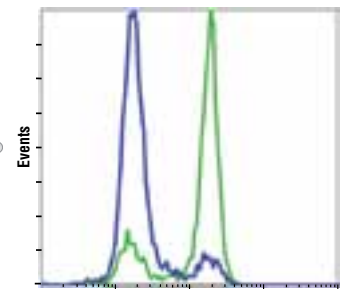
Caspase-3

Caspase-3 is a critical executioner of apoptosis, as it is either partially or totally responsible for the proteolytic cleavage of many key proteins such as the nuclear enzyme poly (ADP-ribose) polymerase (PARP), α -Fodrin, and DFF. Caspase-3 also cleaves caspase-6 and -7, thereby leading to their activation.

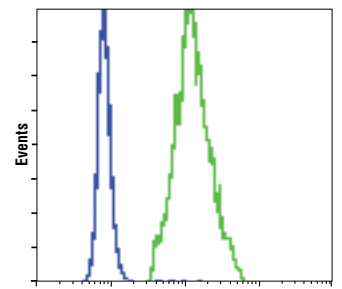


Application References:

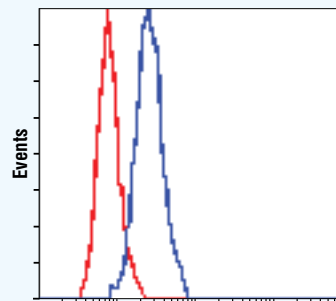
Cleaved Caspase-3 (Asp175) Antibody #9661: Goodyear, C.S. et al. (2004) *In vivo* VL-targeted activation-induced apoptotic supraclonal deletion by a microbial B cell toxin. *J. Immunol.* 172, 2870–2877.
/ Di Cunto, F. et al. (2000) Defective neurogenesis in citron kinase knockout mice by altered cytokinesis and massive apoptosis. *Neuron* 28, 115–127.



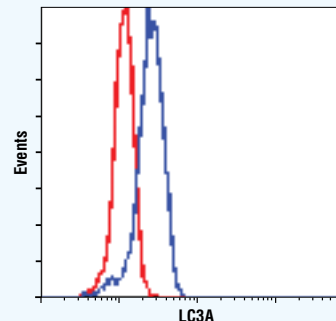
Cleaved Caspase-3 (Asp175) Antibody (Alexa Fluor[®] 488 Conjugate) #9661: Flow cytometric analysis of Jurkat cells, untreated (blue) or etoposide-treated (green), using #9661.



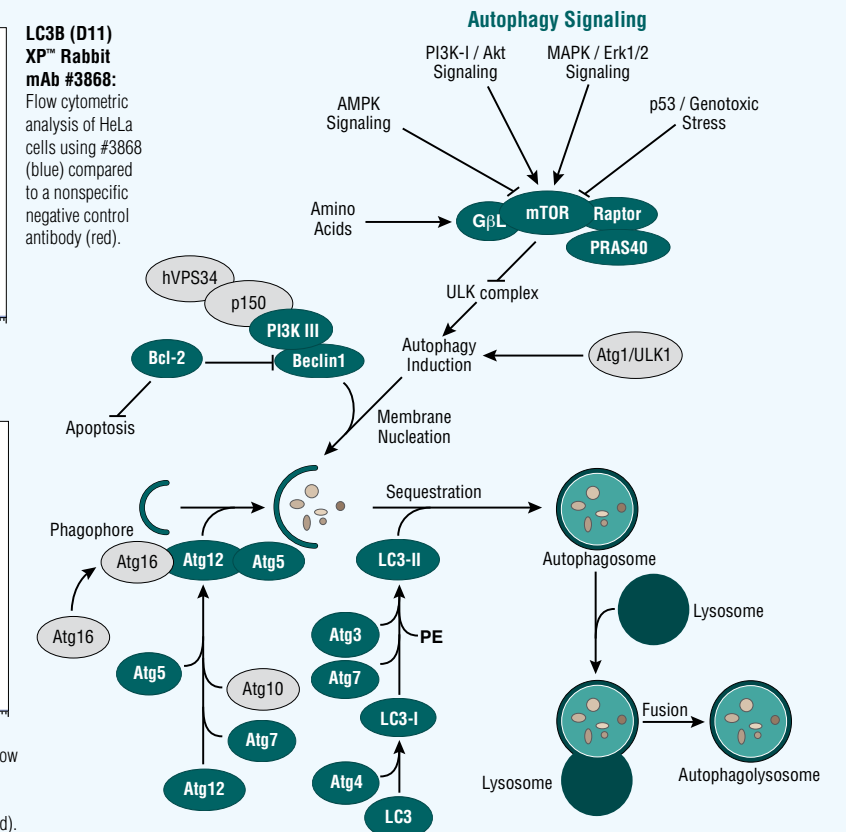
Cleaved-PARP (Asp214) (D64E10) XP[™] Rabbit mAb #5625: Flow cytometric analysis of Jurkat cells, untreated (blue) or etoposide-treated (green), using #5625.



LC3B (D11) XP[™] Rabbit mAb #3868: Flow cytometric analysis of HeLa cells using #3868 (blue) compared to a nonspecific negative control antibody (red).



LC3A (D50G8) XP[™] Rabbit mAb #4599: Flow cytometric analysis of chloroquine-treated HeLa cells, using #4599 (blue) compared to Rabbit (DA1E) mAb IgG XP[™] Isotype Control #3900 (red).

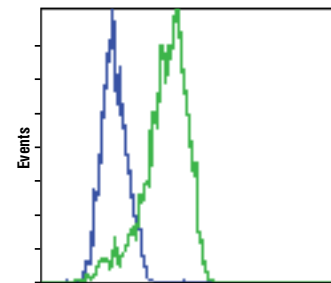
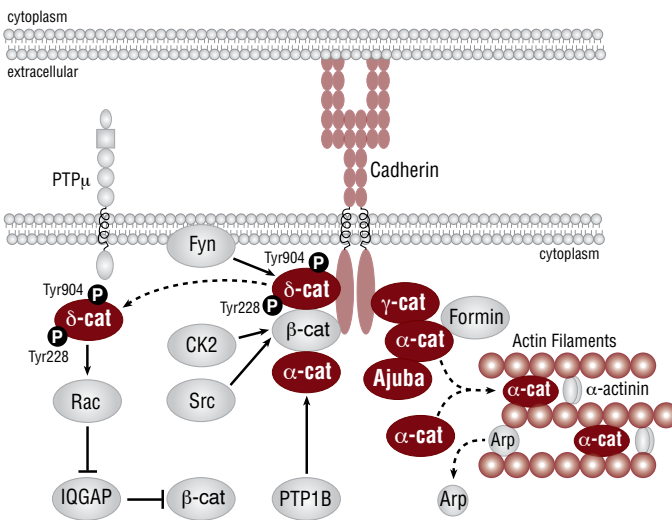


| | Applications | Reactivity |
|---|-------------------------------|----------------------------|
| #2300 Aven Antibody | W, IF-IC, F | H, M, R, Mk |
| #5284 Phospho-Bad (Ser112) (40A9) Rabbit mAb | W, IHC-P, F | H, M, R, Mk |
| #9291 Phospho-Bad (Ser112) Antibody | W, IP, F, E-P | H, M, R, Mk |
| #2827 Phospho-Bcl-2 (Ser70) (5H2) Rabbit mAb | W, IF-IC, F | H |
| #2834 Phospho-Bcl-2 (Ser70) (5H2) Rabbit mAb (Alexa Fluor [®] 488 Conjugate) | CA F | H |
| #2764 Bcl-xL (54H6) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk |
| #2767 Bcl-xL (54H6) Rabbit mAb (Alexa Fluor [®] 488 Conjugate) | CA F | H, M, R, Mk |
| #2933 Bim (C34C5) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, M, R, (Mk, B, Dg) |
| #2819 Bim Antibody | W, IP, IF-IC, F | H, M, R, (Mk) |
| #9664 Cleaved Caspase-3 (Asp175) (5A1E) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk, (Dg) |
| #9661 Cleaved Caspase-3 (Asp175) Antibody | W, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk, B, (Dg, Pg) |
| #9669 Cleaved Caspase-3 (Asp175) Antibody (Alexa Fluor [®] 488 Conjugate) | CA IF-IC, F | H, M, R, Mk, B, (Dg, Pg) |
| #9496 Cleaved Caspase-8 (Asp391) (18C8) Rabbit mAb | W, IHC-P, IF-IC, F | H |
| #9502 Caspase-9 Antibody (Human Specific) | W, F | H |
| NEW #4777 Lamin A/C (4C11) Mouse mAb | W, IP, IHC-P, IF-F, IF-IC, F | H, M, R, Mk |
| NEW #4599 LC3A (D50G8) XP [™] Rabbit mAb | XP 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 | XP 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) |
| #5605 c-Myc (D84C12) XP [™] Rabbit mAb | XP W, IP, IF-IC, F, ChIP | H, M, R, (Mk, Dg, Pg) |
| #2328 PAR-4 Antibody | W, IP, IF-IC, F | H, M, R, Mk |
| NEW #5625 Cleaved-PARP (Asp214) (D64E10) XP [™] Rabbit mAb | XP W, IP, IHC-P, IF-IC, F | H, Mk |
| #9541 Cleaved PARP (Asp214) Antibody (Human Specific) | W, IHC-P, IF-IC, F | H |
| #3693 Perforin Antibody (Mouse Specific) | W, IF-IC, F | M |
| #2808 Survivin (71G4B7) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R |
| #2810 Survivin (71G4B7) Rabbit mAb (Alexa Fluor [®] 488 Conjugate) | CA IF-IC, F | H, M, R |
| #2866 Survivin (71G4B7) Rabbit mAb (Alexa Fluor [®] 647 Conjugate) | CA F | H, M, R |
| NEW #4037 Survivin (71G4B7) Rabbit mAb (Biotinylated) | W, F | H, M, R |
| #3694 TRADD Antibody | W, IP, F | H, M, R, Mk |
| #4715 TRAF1 (45D3) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H, (Mk) |
| #3219 TRAIL (C92B9) Rabbit mAb | W, IP, IHC-P, IF-IC, F | H |

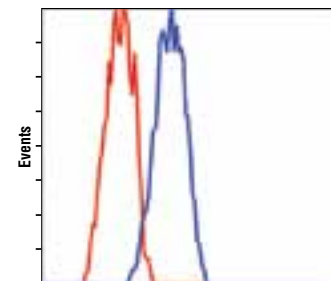
Cytoskeletal Regulation and Adhesion

Cadherins

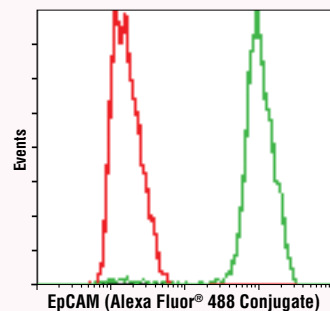
Cadherins mediate calcium-dependent cell-cell adhesion and play critical roles in normal tissue development. The cytoplasmic domain of classical cadherins interacts with β -catenin and γ -catenin, which links the cadherin-catenin complex to the actin cytoskeleton through association with α -catenin. Recent evidence suggests that, rather than acting as a static link between cadherins and actin, α -catenin regulates actin dynamics directly, possibly by competing with the actin nucleating Arp2/3 complex.



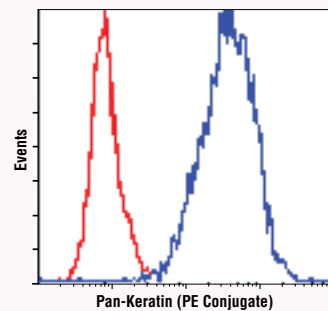
E-Cadherin (24E10) Rabbit mAb (Alexa Fluor® 488 Conjugate) #3199: Flow cytometric analysis of HeLa (blue) and MCF7 cells (green) using #3199.



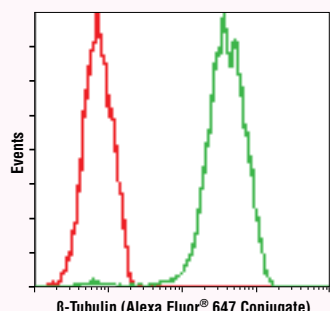
alpha-N-Catenin Antibody #2131: Flow cytometric analysis of PC-12 cells, using #2131 (blue) compared to a nonspecific negative control antibody (red).



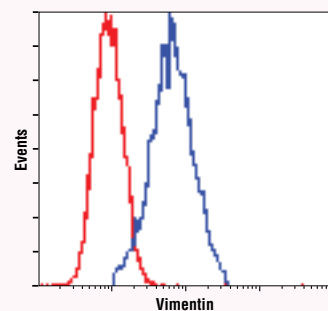
EpCAM (VU1D9) Mouse mAb (Alexa Fluor® 488 Conjugate) #5198: Flow cytometric analysis of unpermeabilized HT-29 cells using #5198 (green) compared to Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor® 488 Conjugate) #4878 (red).



Pan-Keratin (C11) Mouse mAb (PE Conjugate) #5075: Flow cytometric analysis of MCF7 cells using #5075 (blue) compared to a nonspecific negative control antibody (red).



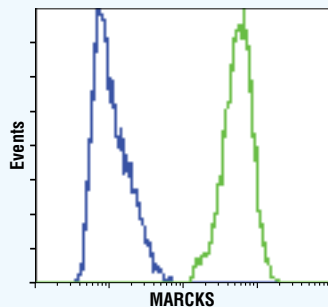
beta-Tubulin (9F3) Rabbit mAb (Alexa Fluor® 647 Conjugate) #3624: Flow cytometric analysis of NIH/3T3 cells using #3624 (green) compared to Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 647 Conjugate) #2985 (red).



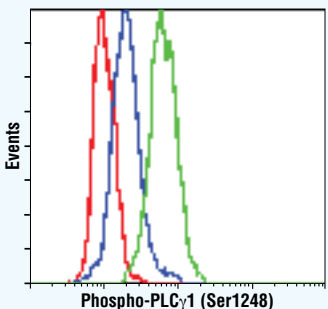
Vimentin (D21H3) XP™ Rabbit mAb #5741: Flow cytometric analysis of HeLa cells using #5741 (blue) compared to Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900 (red).

| | | Applications | Reactivity |
|-----------|---|-------------------------------|-----------------------------|
| #4970 | beta-Actin (13E5) Rabbit mAb | W, IHC-P, IHC-F, IF-IC, F | H, M, R, Mk, B, Pg, (C, Dg) |
| #5057 | beta-Actin (13E5) Rabbit mAb (Biotinylated) | W, F | H, M, R, Mk, B, Pg, (C, Dg) |
| #3700 | beta-Actin (8H10D10) Mouse mAb | W, IHC-P, IF-IC, F | H, M, R, Hm, Mk |
| #4897 | Ajuba Antibody | W, IP, F | H, M, Mk, B, (R) |
| #3195 | E-Cadherin (24E10) Rabbit mAb | W, IHC-P, IHC-F, IF-IC, F | H, M, (Dg) |
| #3199 | E-Cadherin (24E10) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, IF-P, F | H, M, (Dg) |
| #2130 | P-Cadherin Antibody | W, IP, IF-IC, F | H |
| #2131 | alpha-N-Catenin Antibody | W, IP, IF-IC, F | H, M, R |
| #4989 | Catenin delta-1 Antibody | W, F | H, M, R |
| #3267 | Caveolin-1 (D46G3) XP™ Rabbit mAb | XP W, IP, IHC-P, IF-IC, F | H, M, R, Hm, Mk, B, Dg |
| #3238 | Caveolin-1 Antibody | W, IP, IHC-P, IHC-F, IF-IC, F | H, M, R, Hm, Z, B, Pg |
| #2383 | CEA/CD66e (CB30) Mouse mAb | W, IHC-P, IF-IC, F | H |
| #3455 | Phospho-DRP1 (Ser616) Antibody | W, IP, IF-IC, F | H, (M, R, Mk) |
| #2929 | EpCAM (VU1D9) Mouse mAb | W, IHC-P, IF-IC, F | H |
| NEW #5198 | EpCAM (VU1D9) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H |
| NEW #5447 | EpCAM (VU1D9) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H |
| #3145 | Ezrin Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, B |
| #4703 | Integrin alpha9beta1 (Y9A2) Mouse mAb | IP, F | H |
| #4545 | Pan-Keratin (C11) Mouse mAb | W, IHC-P, IF-IC, IF-P, F | H, R, Mk |
| #4523 | Pan-Keratin (C11) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, IF-P, F | H, R, Mk |
| #4528 | Pan-Keratin (C11) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, IF-P, F | H, R, Mk |
| NEW #4279 | Pan-Keratin (C11) Mouse mAb (Biotinylated) | W, F | H, R, Mk |
| NEW #5075 | Pan-Keratin (C11) Mouse mAb (PE Conjugate) | CA F | H, R, Mk |
| #4546 | Keratin 8/18 (C51) Mouse mAb | W, IHC-P, F | H, Mk |
| #3519 | Phospho-Keratin 17 (Ser44) Antibody | W, F | H, (Mk) |
| #4543 | Keratin 17 (D73C7) XP™ Rabbit mAb | XP W, IF-IC, F | H, M, R, Mk, (Dg) |
| #4548 | Keratin 18 (DC10) Mouse mAb | W, IHC-P, IF-IC, F | H |
| #3845 | LIMK2 (8C11) Rabbit mAb | W, F | H, Mk, (M) |
| #3150 | Moesin (Q480) Antibody | W, IF-IC, F | H, M, R, B |
| #3146 | Moesin Antibody | W, F | H, M, R, Mk, B |
| #3723 | Mst3 Antibody | W, F | H, M, R, Mk |
| #4538 | MUC1 (VU4H5) Mouse mAb | W, IP, IHC-P, F | H |
| #3729 | OSR1 Antibody | W, IF-IC, F | H, Mk, B |
| NEW #5213 | PCM-1 (G2000) Antibody | W, IP, IF-IC, F | H, M, (Mk) |
| NEW #5259 | PCM-1 (Q15) Antibody | W, IP, IF-IC, F | H, (Mk) |
| #3237 | Profilin-1 Antibody | W, IF-IC, F | H, M, R, B |
| #2465 | Rac1/2/3 Antibody | W, F | H, M, R, Mk, B |
| #2399 | Rap1A/Rap1B (26B4) Rabbit mAb | W, F | H, M, R, Mk, B |
| #4938 | Rap1A/Rap1B Antibody | W, F | H, M, R, Mk, B |
| #2564 | RhoGDI Antibody | W, IF-IC, F | H, M, R, B |
| #2125 | alpha-Tubulin (11H10) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk, Dm, B, (Dg) |
| NEW #5063 | alpha-Tubulin (11H10) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, R, Mk, Dm, B, (Dg) |
| NEW #5046 | alpha-Tubulin (11H10) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, R, Mk, Dm, B, (Dg) |
| #2144 | alpha-Tubulin Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk, Dm, B, (X) |
| #2148 | alpha/beta-Tubulin Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk, Z, B |
| #2128 | beta-Tubulin (9F3) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk, Z, B, (C) |
| #3623 | beta-Tubulin (9F3) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, R, Mk, Z, B, (C) |
| #3624 | beta-Tubulin (9F3) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, R, Mk, Z, B, (C) |
| NEW #5867 | beta-Tubulin (9F3) Rabbit mAb (PE Conjugate) | CA F | H, M, R, Mk, Z, B, (C) |
| #2146 | beta-Tubulin Antibody | W, IHC-P, IF-IC, F | H, M, R, Mk, Z, B, (X) |
| #2502 | Vav1 Antibody | W, IP, F | H, M, R |
| NEW #5741 | Vimentin (D21H3) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H, M, R, Mk |
| NEW #9856 | Vimentin (D21H3) XP™ Rabbit mAb (Alexa Fluor® 647 Conjugate) | F | H, M, R, Mk |

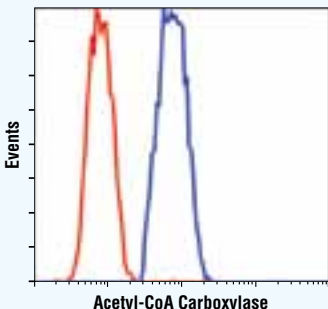
Other Antibodies



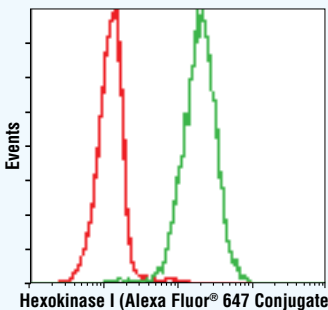
MARCKS (D88D11) XP™ Rabbit mAb #5607: Flow cytometric analysis of Jurkat (blue) and HeLa (green) cells using #5607.



Phospho-PLC γ 1 (Ser1248) Antibody #4510: Flow cytometric analysis of Jurkat cells, untreated (blue) or treated with TPA #4174 (green), using #4510 compared to a nonspecific negative control antibody (red).



Acetyl-CoA Carboxylase (C83B10) Rabbit mAb #3676: Flow cytometric analysis of 293 cells using #3676 (blue) compared to a nonspecific negative control antibody (red).



Hexokinase I (C35C4) Rabbit mAb (Alexa Fluor® 647 Conjugate) #3540: Flow cytometric analysis of MCF7 cells using #3540 (green) compared to concentration matched Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 647 Conjugate) #2985 (red).

Neuroscience

| | Applications | Reactivity |
|--|---|---------------------|
| #9198 Phospho-CREB (Ser133) (87G3) Rabbit mAb | W, IHC-P, IHC-F, IF-F, IF-IC, F, ChIP | H, M, R |
| #9187 Phospho-CREB (Ser133) (87G3) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-F, IF-IC, F | H, M, R |
| #9197 CREB (48H2) Rabbit mAb | W, IP, IHC-P, IHC-F, IF-F, IF-IC, F, ChIP | H, M, R, Mk, Dm |
| #4820 CREB (D76D11) Rabbit mAb | W, IP, IF-F, IF-IC, F, ChIP | H, M, R, Hm, Mk, Dm |
| #9104 CREB (86B10) Mouse mAb | W, IF-F, IF-IC, F | H, M, R, Mk |
| #4604 Doublecortin Antibody | W, IP, IF-F, F | H, M, R, Mk, Dm |
| #4154 EGR1 (44D5) Rabbit mAb | W, IP, IF-IC, F, ChIP | H, M, R, (B) |
| #2770 SOD1 Antibody | W, F | H |
| #3347 SYT1 Antibody | W, IF-IC, F | H, M, R, Mk |
| #4609 Trk (pan) (C17F1) Rabbit mAb | W, IP, IF-IC, F | H, M, R |
| #4607 TrkB (80G2) Rabbit mAb | IHC-P, F | H, (M, R) |

Calcium, cAMP, and Lipid Signaling

| | Applications | Reactivity |
|---|-----------------------|-------------------|
| NEW #5607 MARCKS (D88D11) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H, Mk |
| #9694 PIP5K2B Antibody | W, F | H, M, R, Mk |
| #4782 PKA C- α Antibody | W, IP, IF-IC, F | H, M, R |
| #2056 PKC α Antibody | W, IP, IF-IC, F | H, M, R, Mk, (Dg) |
| #2998 PKC ζ (C83H11) Rabbit mAb | W, F | H, M, R, Mk |
| #2052 PKD/PKC ζ Antibody | W, F | H, M, R, Mk |
| #2821 Phospho-PLC γ 1 (Tyr783) Antibody | W, F | H, M, R |
| #4510 Phospho-PLC γ 1 (Ser1248) Antibody | W, IF-IC, F | H, M, Mk |

Glucose and Energy Metabolism

| | Applications | Reactivity |
|--|-------------------------------|-------------------------|
| #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) |
| #4150 AMPK β 1/2 (57C12) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Hm, Mk |
| NEW #5345 ASCT2 (V501) Antibody | W, IP, IF-IC, F | H, M, R |
| #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) | CA IF-F, IF-IC, F | H, R, Mk, Z, B, Pg |
| #4844 COX IV Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, B |
| #2118 GAPDH (14C10) Rabbit mAb | W, IHC-P, IF-IC, F | H, M, R, Mk |
| #3906 GAPDH (14C10) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #3907 GAPDH (14C10) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M, R, Mk |
| #5014 GAPDH (14C10) Rabbit mAb (Biotinylated) | W, IF-IC, F | H, M, R, Mk |
| #3893 Glycogen Synthase Antibody | W, IP, F | H, M, R |
| #3689 Hexokinase I (C35C4) Rabbit mAb (Alexa Fluor® 488 Conjugate) | CA IF-IC, F | H, M |
| #3540 Hexokinase I (C35C4) Rabbit mAb (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | H, M |
| #3027 IGF-I Receptor β Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk |
| #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 |

Nuclear Receptor Signaling

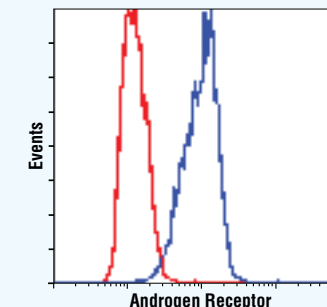
| | Applications | Reactivity |
|--|-----------------------|------------|
| NEW #5153 Androgen Receptor (D6F11) XP™ Rabbit mAb | XP W, IHC-P, IF-IC, F | H |
| #3960 Nur77 (D63C5) XP™ Rabbit mAb | XP W, IP, IF-IC, F | H, (Mk) |
| #3153 Progesterone Receptor A/B (C89F7) Rabbit mAb | W, IHC-P, F | H |
| #3176 Progesterone Receptor A/B Antibody | W, IHC-P, IF-IC, F | H |
| #3157 Progesterone Receptor B (C1A2) Rabbit mAb | W, IHC-P, IF-IC, F | H |
| #2115 SRC-3 (11B1) Mouse mAb | W, IF-IC, F | H |

Phosphatases

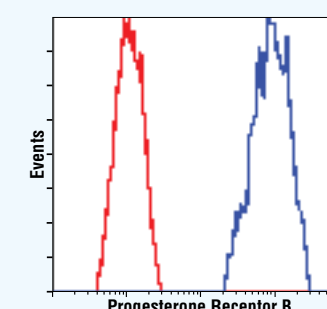
| | Applications | Reactivity |
|--|---------------------------|--------------------------------|
| #2614 Pan-Calceineurin A Antibody | W, IP, IF-IC, F | H, M, R, Mk, Dm, (C, X, B, Pg) |
| #2039 PP2A A Subunit Antibody | W, IF-IC, F | H, M, R, Mk, Dm |
| #4953 PP2A B Subunit Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, (C) |
| #2259 PP2A C Subunit (52F8) Rabbit mAb | W, IP, IHC-P, F | H, M, R, Mk, Dm, (C, Pg) |
| #2038 PP2A C Subunit Antibody | W, IP, IHC-P, IF-IC, F | H, M, R, Mk, Dm, (C, Pg) |
| #3549 PP2C- α (D18C10) XP™ Rabbit mAb | XP W, IP, IHC-P, IF-IC, F | H, Mk |
| #2289 PP5 Antibody | W, F | H, M, R, Mk |
| #2725 SHIP1 (C15C9) Rabbit mAb | W, IP, F | H |
| #2727 SHIP1 (C40G9) Rabbit mAb | W, IP, IF-IC, F | H |
| #2726 SHIP1 (P290) Antibody | W, IP, IF-IC, F | H |
| NEW #5445 Phospho-SHIP2 (Tyr1135) (D33C6) XP™ Rabbit mAb | XP W, IP, F | H |
| #2839 SHIP2 (C76A7) Rabbit mAb | W, IP, IF-IC, F | H |
| NEW #5431 Phospho-SHP-2 (Tyr580) (D66F10) Rabbit mAb | W, IP, F | M, R, (H) |

Phospho-Ser/Thr/Tyr Motif Antibodies

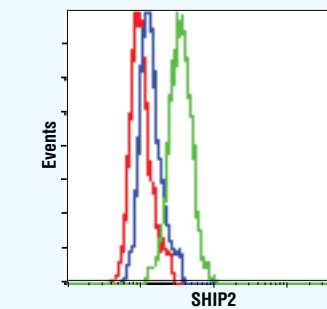
| | Applications | Reactivity |
|---|---|------------|
| #9411 Phospho-Tyrosine Mouse mAb (P-Tyr-100) | W, IP, IHC-P, IF-F, IF-IC, IF-P, F, E-P | All |
| #9414 Phospho-Tyrosine Mouse mAb (P-Tyr-100) (Alexa Fluor® 488 Conjugate) | CA F | All |
| #9415 Phospho-Tyrosine Mouse mAb (P-Tyr-100) (Alexa Fluor® 647 Conjugate) | CA IF-IC, F | All |
| #9416 Phospho-Tyrosine Mouse mAb (P-Tyr-102) | W, IP, IHC-P, F, E-P | All |



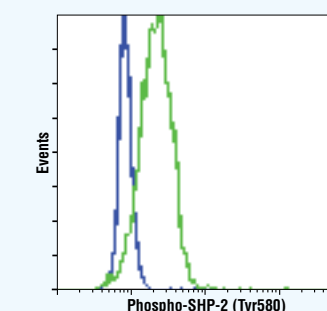
Androgen Receptor (D6F11) XP™ Rabbit mAb #5153: Flow cytometric analysis of DU 145 cells (red) and LNCaP cells (blue) using #5153.



Progesterone Receptor B (C1A2) Rabbit mAb #3157: Flow cytometric analysis of T-47D cells using #3157 (blue) compared to a nonspecific negative control antibody (red).



Phospho-SHIP2 (Tyr1135) (D33C6) XP™ Rabbit mAb #5445: Flow cytometric analysis of K-562 cells, untreated (green) or λ phosphatase-treated (blue), using #5445 compared to concentration matched Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900 (red).

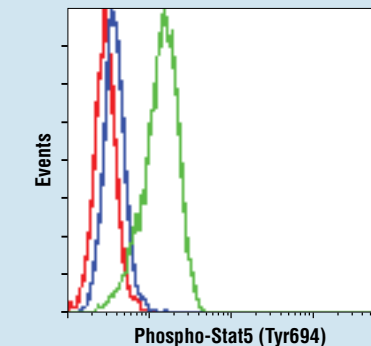


Phospho-SHP-2 (Tyr580) (D66F10) Rabbit mAb #5431: Flow cytometric analysis of NIH/3T3 cells, untreated (blue) or PDGF-treated (green), using #5431.

Isotype Controls

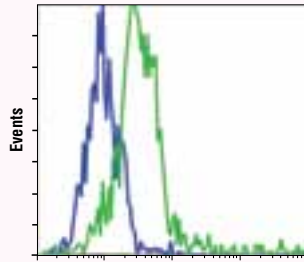
Isotype control antibodies are used to estimate the non-specific binding of target primary antibodies due to F_c receptor binding or other protein-protein interactions and therefore should have the same immunoglobulin type as the test antibody. Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900 is a rabbit monoclonal antibody that is not directed against any known antigen. The antibody is prepared using the very same procedure that is employed for our rabbit monoclonal antibodies. It therefore serves as a more appropriate control than a more heterogeneous polyclonal rabbit IgG. Use of this product as a control for CST™ rabbit monoclonal antibodies is highly recommended. Alexa Fluor® 488 and 647 Conjugates (#2975 and #2985) are also available.

See page 30 for a complete list of Isotype Controls.



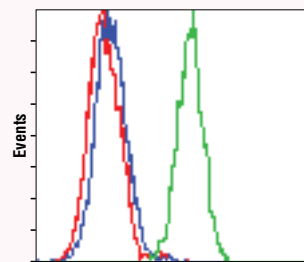
Rabbit (DA1E) mAb IgG XP™ Isotype Control #3900: Flow cytometric analysis of K-562 cells, untreated (green) or imatinib-treated (blue), using Phospho-Stat5 (Tyr694) (C71E5) Rabbit mAb #9314 compared to concentration matched #3900 (red).

Complementary Reagents



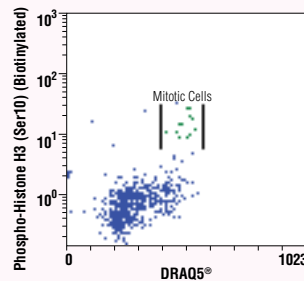
HA-Tag (Alexa Fluor® 488 Conjugate)

HA-Tag (6E2) Mouse mAb (Alexa Fluor® 488 Conjugate) #2350: Flow cytometric analysis of COS-7 cells, untransfected (blue) or transfected with HA-tagged Akt3 (green), using #2350.

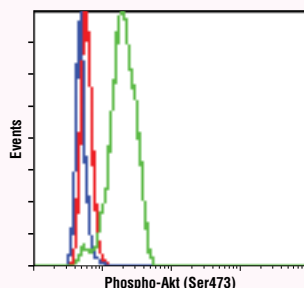


Mouse mAb IgG1 Isotype Control (Alexa Fluor® 488 Conjugate)

Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor® 488 Conjugate) #4878: Flow cytometric analysis of Jurkat cells, treated with U0126 #9903 (red), or TPA #4174 (green), using Phospho-p44/42 MAPK (Erk1/2) (Thr202/Tyr204) (E10) Mouse mAb (Alexa Fluor® 488 Conjugate) #4374 compared to #4878 (blue).



DRAQ5® #4084: Flow cytometric analysis of Jurkat cells using Phospho-Histone H3 (Ser10) (D2C8) XP™ Rabbit mAb (Biotinylated) #3642 versus #4084 (DNA content).



Epitope Tag Antibodies

| | | Applications | Reactivity |
|-------|--|--------------|----------------------------|
| #5407 | DYKDDDDK Tag Antibody (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Alexa Fluor® 488 Conjugate) | CA | IF-IC, F All |
| #2372 | β-Gal (14B7) Mouse mAb | | W, IP, IF-IC, F All |
| #2956 | GFP (D5.1) XP™ Rabbit mAb | XP | W, IHC-P, IF-IC, F All |
| #2955 | GFP (4B10) Mouse mAb | | W, IHC-P, F All |
| #3724 | HA-Tag (C29F4) Rabbit mAb | | W, IP, IHC-P, IF-IC, F All |
| #5017 | HA-Tag (C29F4) Rabbit mAb (Biotinylated) | | W, F All |
| #2367 | HA-Tag (6E2) Mouse mAb | | W, IHC-P, IF-IC, F All |
| #2350 | HA-Tag (6E2) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA | IF-IC, F All |
| #3444 | HA-Tag (6E2) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA | IF-IC, F All |
| #3368 | GST (26H1) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA | IF-IC, F All |
| #3445 | GST (26H1) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA | F All |
| #2278 | Myc-Tag (71D10) Rabbit mAb | | W, IP, IF-IC, F All |
| #3946 | Myc-Tag (71D10) Rabbit mAb (Biotinylated) | | W, F All |
| #2276 | Myc-Tag (9B11) Mouse mAb | | W, IP, IHC-P, IF-IC, F All |
| #2279 | Myc-Tag (9B11) Mouse mAb (Alexa Fluor® 488 Conjugate) | CA | IF-IC, F All |
| #2233 | Myc-Tag (9B11) Mouse mAb (Alexa Fluor® 647 Conjugate) | CA | IF-IC, F All |
| #2272 | Myc-Tag Antibody | | W, IF-IC, F All |

Isotype Controls

| | | Applications | Reactivity |
|-----------|--|--------------|---------------------------|
| NEW #5415 | Mouse (G3A1) mAb IgG1 Isotype Control | | IP, IHC-P, IF-IC, F, ChIP |
| NEW #6899 | Mouse (G3A1) mAb IgG1 Isotype Control (PE Conjugate) | CA | F |
| #4878 | Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor® 488 Conjugate) | CA | F |
| #4843 | Mouse (MOPC-21) mAb IgG1 Isotype control (Alexa Fluor® 647 Conjugate) | CA | F |
| NEW #4097 | Mouse (MOPC-21) mAb IgG1 Isotype Control (Biotinylated) | | IP, F |
| #3900 | Rabbit (DA1E) mAb IgG XP™ Isotype Control | XP | IHC-P, IF-IC, F |
| #2975 | Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 488 Conjugate) | XP CA | F |
| #2985 | Rabbit (DA1E) mAb IgG XP™ Isotype Control (Alexa Fluor® 647 Conjugate) | XP CA | F |
| #4096 | Rabbit (DA1E) mAb IgG XP™ Isotype Control (Biotinylated) | XP | IP, F |
| NEW #5742 | Rabbit (DA1E) mAb IgG XP™ Isotype Control (PE Conjugate) | XP CA | F |
| #4340 | Rabbit IgG Isotype Control (Alexa Fluor® 488 Conjugate) | CA | F |
| #3452 | Rabbit IgG Isotype Control (Alexa Fluor® 647 Conjugate) | CA | F |

Dyes and Secondary Antibodies

| | | Applications | Reactivity |
|-----------|--|--------------|--------------------------|
| #4084 | DRAQ5® | | IF-F, IF-IC, IF-P, F All |
| NEW #4087 | Propidium Iodide (PI)/RNase Staining Solution | | IF-F, IF-IC, IF-P, F All |
| #4408 | Anti-mouse IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 488 Conjugate) | CA | |
| #4410 | Anti-mouse IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 647 Conjugate) | CA | |
| #4412 | Anti-rabbit IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 488 Conjugate) | CA | |
| #4414 | Anti-rabbit IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 647 Conjugate) | CA | |
| #4416 | Anti-rat IgG (H+L), (Alexa Fluor® 488 Conjugate) | CA | |
| #4418 | Anti-rat IgG (H+L), (Alexa Fluor® 647 Conjugate) | CA | |

◀ **Anti-rabbit IgG (H+L), F(ab')₂ Fragment (Alexa Fluor® 488 Conjugate) #4412:** Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 #9901, Wortmannin #9951, and U0126 #9903 (blue), using Phospho-Akt (Ser473) (D9E) XP™ Rabbit mAb #4060 detected with #4412 and compared to a nonspecific negative control antibody (red).

Flow Cytometry Protocols

General Flow Cytometry Protocol

A. Solutions and Reagents

- 1X Phosphate Buffered Saline (PBS):** Dissolve 8 g NaCl, 0.2 g KCl, 1.44 g Na₂HPO₄ and 0.24 g KH₂PO₄ in 800 ml distilled water (dH₂O). Adjust the pH to 7.4 with HCl and the volume to 1 L. Store at room temperature.
- Formaldehyde (methanol free)
- Incubation Buffer:** Dissolve 0.5 g bovine serum albumin (BSA) in 100 ml 1X PBS. Store at 4°C.

B. Fixation

- Collect cells by centrifugation and aspirate supernatant.
- Resuspend cells briefly in 0.5–1 ml PBS. Add formaldehyde to a final concentration of 2–4% formaldehyde.
- Fix for 10 minutes at 37°C.
- Chill tubes on ice for 1 minute.
- For extracellular staining with antibodies that do not require permeabilization, proceed to step D1 or store cells in PBS with 0.1% sodium azide at 4°C; for intracellular staining, proceed to permeabilization step C1.

C. Permeabilization

- Permeabilize cells by adding ice-cold 100% methanol slowly to pre-chilled cells, while gently vortexing, to a final concentration of 90% methanol. Alternatively, to remove fix prior to permeabilization, pellet cells by centrifugation and resuspend in 90% methanol.
- Incubate 30 minutes on ice.
- Proceed with staining or store cells at –20°C in 90% methanol.

D. Immunostaining

NOTE: Account for isotype matched controls for monoclonal antibodies or species matched IgG for polyclonal antibodies. Count cells using a hemacytometer or alternative method.

- Aliquot 0.5–1x10⁶ cells into each assay tube (by volume).
- Add 2–3 ml Incubation Buffer to each tube and rinse by centrifugation. Repeat.
- Resuspend cells in 100 µl Incubation Buffer per assay tube.
- Block in Incubation Buffer for 10 minutes at room temperature.
- Add the unconjugated, biotinylated, or fluorochrome-conjugated primary antibody at the appropriate dilution to the assay tubes (see individual antibody datasheet for the appropriate dilution).
- Incubate for 1 hour at room temperature.
- Rinse as before in Incubation Buffer by centrifugation.
- If using a fluorochrome-conjugated primary antibody, resuspend cells in 0.5 ml PBS and analyze on flow cytometer; for unconjugated or biotinylated primary antibodies, proceed to step D9.
- Resuspend cells in fluorochrome-conjugated secondary antibody* or fluorochrome-conjugated avidin, diluted in Incubation Buffer at the recommended dilution.
- Incubate for 30 minutes at room temperature.
- Rinse as before in Incubation Buffer by centrifugation.
- Resuspend cells in 0.5 ml PBS and analyze on flow cytometer; alternatively, for DNA staining, proceed to step E1.

E. Optional DNA Stain

- Resuspend cells in 0.5 ml of DNA dye (e.g. DRAQ5® #4084).
- Incubate for at least 5 minutes at room temperature.
- Analyze cells in DNA stain on flow cytometer.

Alternate Protocol for Signaling Analysis in Peripheral Blood Labeled with Surface Markers

A. Solutions and Reagents

- 10X Phosphate Buffered Saline (PBS):** To prepare 1 L add 80 g NaCl, 2 g KCl, 14.4 g Na₂HPO₄ and 2.4 g KH₂PO₄ and adjust volume to 1 L with dH₂O. Adjust pH to 7.4.
- Formaldehyde (methanol free)
- Incubation Buffer:** Dissolve 0.5 g bovine serum albumin (BSA) in 100 ml 1X PBS. Store at 4°C.

B. Preparation of Whole Blood (fixation, lysis and permeabilization) for Immunostaining

- Aliquot 100 µl fresh whole blood per assay tube.
- OPTIONAL:** Place tubes in rack in 37°C water bath for short-term treatments with ligands, inhibitors, drugs, etc.
- Add 65 µl of 10% formaldehyde to each tube.
- Vortex briefly and let stand for 15 minutes at room temperature.
- Add 1 ml of Triton X-100 in PBS to make 0.1% Triton final concentration.
- Vortex and let stand for 30 minutes at room temperature.
- Add 1 ml incubation buffer.
- Pellet cells by centrifugation and aspirate supernatant.
- Resuspend cells in cold 50% methanol in PBS (store methanol solution at –20°C until just before use).
- Incubate at least 10 minutes on ice.
- Proceed with staining or store cells at –20°C in 50% methanol.

C. Immunostaining

- Add 2–3 ml Incubation Buffer to each tube and rinse by centrifugation. Repeat.
- Resuspend cells in 100 µl Incubation Buffer per assay tube.
- Block in Incubation Buffer for 10 minutes at room temperature.
- Add the unconjugated, biotinylated, or fluorochrome-conjugated primary antibody at the appropriate dilution to the assay tubes (see individual antibody datasheet for the appropriate dilution).
- Incubate for 1 hour at room temperature.
- Rinse as before in Incubation Buffer by centrifugation.
- If using a fluorochrome-conjugated primary antibody, resuspend cells in 0.5 ml PBS and analyze on flow cytometer; for unconjugated or biotinylated primary antibodies, proceed to step D9.
- Resuspend cells in fluorochrome-conjugated secondary antibody* or fluorochrome-conjugated avidin, diluted in Incubation Buffer at the recommended dilution.
- Incubate for 30 minutes at room temperature.
- Rinse as before in Incubation Buffer by centrifugation.
- Resuspend cells in 0.5 ml PBS and analyze on flow cytometer.

Protocol Reference: Chow S., Hedley D., Grom P., Magari R., Jacobberger J.W., Shankey T.V. (2005) Whole blood fixation and permeabilization protocol with red blood cell lysis for flow cytometry of intracellular phosphorylated epitopes in leukocyte subpopulations. *Cytometry A*. 67, 4–17.

*Recommended Secondary Antibodies

| | |
|--------------------|--|
| Anti-Rabbit | Anti-Rabbit IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 488 Conjugate) #4412 Anti-Rabbit IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 647 Conjugate) #4414 |
| Anti-Mouse | Anti-Mouse IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 488 Conjugate) #4408 Anti-Mouse IgG (H+L), F(ab') ₂ Fragment (Alexa Fluor® 647 Conjugate) #4410 |
| Anti-Rat | Anti-Rat IgG (H+L), (Alexa Fluor® 488 Conjugate) #4416 Anti-Rat IgG (H+L), (Alexa Fluor® 647 Conjugate) #4418 |



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