

# Companion Products

Control and Secondary Antibodies, Detection Reagents, Buffers, and Other Reagents to Complete Your Workflow



Cell Signaling Technology (CST) offers a wide selection of epitope-tagged and control antibodies, secondary antibodies, detection reagents, and experimental controls as well as standard buffers and other reagents required to complete your experimental workflow. These same reagents are also used in-house for antibody validation for applications including western blotting, immunohistochemistry, flow cytometry, and immunofluorescent analysis and, therefore, work optimally with our primary antibodies. Technical support is provided by the product scientists who make the reagents and know them best.



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# Epitope Tag Antibodies

Available in unconjugated format or conjugated to bead, fluorophores, HRP, and biotin.

	APPLICATIONS
#14682 Digoxigenin (D8Q9J) Rabbit mAb	WB
#49620 Digoxigenin (D8Q9J) Rabbit mAb (HRP Conjugate)	WB
#14681 Dinitrophenol (D1D6) Rabbit mAb	WB
#58203 Dinitrophenol (D1D6) Rabbit mAb (HRP Conjugate)	WB
#8146 DYKDDDDK Tag (9A3) Mouse mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody)	WB, IP, IHC-P, IF-IC, F
#14793 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody)	WB, IP, IHC-P, IF-IC, F, ChIP
#15008 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Alexa Fluor® 488 Conjugate)	F
#15009 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Alexa Fluor® 647 Conjugate)	F
#15010 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Pacific Blue™ Conjugate)	F
#98533 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (PE Conjugate)	F
#70569 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Sepharose® Bead Conjugate)	IP
#2368 DYKDDDDK Tag Antibody (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody)	WB, IP, F
#2908 DYKDDDDK Tag Antibody (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Biotinylated)	WB, IP
#2044 DYKDDDDK Tag Antibody (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (HRP Conjugate)	WB
#13419 E-Tag Antibody	WB, IP
#2956 GFP (D5.1) XP® Rabbit mAb	WB, IHC-P, IF-IC, F
#2912 GFP (D5.1) XP® Rabbit mAb (Biotinylated)	WB
#2037 GFP (D5.1) XP® Rabbit mAb (HRP Conjugate)	WB
#2955 GFP (4B10) Mouse mAb	WB, IHC-P, F
#2555 GFP Antibody	WB, IHC-P
#2448 Glu-Glu Tag Antibody	WB, IP, IF-IC
#9325 GSK-3β-Tag Antibody	WB
#2625 GST (91G1) Rabbit mAb	WB, IP
#5475 GST (91G1) Rabbit mAb (HRP Conjugate)	WB
#2624 GST (26H1) Mouse mAb	WB, IP, IF-IC
#3368 GST (26H1) Mouse mAb (Alexa Fluor® 488 Conjugate)	IF-IC, F
#3445 GST (26H1) Mouse mAb (Alexa Fluor® 647 Conjugate)	F
#11847 GST (26H1) Mouse mAb (Magnetic Bead Conjugate)	IP
#2622 GST Antibody	WB, IP
#3724 HA-Tag (C29F4) Rabbit mAb	WB, IP, IHC-P, IF-IC, F, ChIP
#5017 HA-Tag (C29F4) Rabbit mAb (Biotinylated)	WB
#14031 HA-Tag (C29F4) Rabbit mAb (HRP Conjugate)	WB
#11846 HA-Tag (C29F4) Rabbit mAb (Magnetic Bead Conjugate)	IP
#14904 HA-Tag (C29F4) Rabbit mAb (PE Conjugate)	F
#3956 HA-Tag (C29F4) Rabbit mAb (Sepharose® Bead Conjugate)	IP
#2367 HA-Tag (6E2) Mouse mAb	WB, IHC-P, IF-IC, F
#2350 HA-Tag (6E2) Mouse mAb (Alexa Fluor® 488 Conjugate)	IF-IC, F
#3444 HA-Tag (6E2) Mouse mAb (Alexa Fluor® 647 Conjugate)	IF-IC, F
#2999 HA-Tag (6E2) Mouse mAb (HRP Conjugate)	WB
#12698 His-Tag (D3I10) XP® Rabbit mAb	WB, IP, IF-IC, F, ChIP
#14930 His-Tag (D3I10) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate)	IF-IC, F
#14931 His-Tag (D3I10) XP® Rabbit mAb (Alexa Fluor® 647 Conjugate)	IF-IC, F
#15070 His-Tag (D3I10) XP® Rabbit mAb (Biotinylated)	WB

	APPLICATIONS
#12688 His-Tag (D3I10) XP® Rabbit mAb (HRP Conjugate)	WB
#15024 His-Tag (D3I10) XP® Rabbit mAb (PE Conjugate)	F
#82437 His-Tag (D3I10) XP® Rabbit mAb (Sepharose® Bead Conjugate)	IP
#2366 His-Tag (27E8) Mouse mAb	WB, IP
#9991 His-Tag (27E8) Mouse mAb (HRP Conjugate)	WB
#8811 His-Tag (27E8) Mouse mAb (Magnetic Bead Conjugate)	IP
#4079 His-Tag (27E8) Mouse mAb (Sepharose® Bead Conjugate)	IP
#2365 His-Tag Antibody	WB, IP
#68083 HPC4-Tag Antibody	WB, IP
#53061 mNeonGreen Tag Antibody	WB
#2278 Myc-Tag (71D10) Rabbit mAb	WB, IP, IF-IC, F
#3946 Myc-Tag (71D10) Rabbit mAb (Biotinylated)	WB
#14038 Myc-Tag (71D10) Rabbit mAb (HRP Conjugate)	WB
#42136 Myc-Tag (71D10) Rabbit mAb (Alexa Fluor® 700 Conjugate)	F
#64025 Myc-Tag (71D10) Rabbit mAb (PE Conjugate)	F
#2396 MBP Tag (8G1) Mouse mAb	WB, IP, IF-IC
#2276 Myc-Tag (9B11) Mouse mAb	WB, IP, IHC-P, IF-IC, F, ChIP
#2279 Myc-Tag (9B11) Mouse mAb (Alexa Fluor® 488 Conjugate)	IF-IC, F
#3756 Myc-Tag (9B11) Mouse mAb (Alexa Fluor® 555 Conjugate)	IF-IC
#9483 Myc-Tag (9B11) Mouse mAb (Alexa Fluor® 594 Conjugate)	IF-IC
#2233 Myc-Tag (9B11) Mouse mAb (Alexa Fluor® 647 Conjugate)	IF-IC, F
#2040 Myc-Tag (9B11) Mouse mAb (HRP Conjugate)	WB
#5698 Myc-Tag (9B11) Mouse mAb (Magnetic Bead Conjugate)	IP
#3739 Myc-Tag (9B11) Mouse mAb (PE Conjugate)	F
#3400 Myc-Tag (9B11) Mouse mAb (Sepharose® Bead Conjugate)	IP
#2272 Myc-Tag Antibody	WB, IF-IC, F
#12774 S-Tag (D2K2V) XP® Rabbit mAb	WB, IP, IF-IC, F
#2372 β-Gal (14B7) Mouse mAb	WB, IP, IF-IC, F
#13246 T7-Tag (D9E1X) XP® Rabbit mAb	WB, IP, IF-IC
#14044 T7-Tag (D9E1X) XP® Rabbit mAb (HRP Conjugate)	WB
#13202 V5-Tag (D3H8Q) Rabbit mAb	WB, IP, IF-IC, F

Visit [cst-science.com/comp-tags](http://cst-science.com/comp-tags) for the full list of epitope tag antibodies.



# Western Blot

Cell Signaling Technology (CST) offers a wide selection of secondary antibodies and detection reagents, as well as standard buffers and experimental controls for western blotting. Our antibodies perform best when CST-recommended protocols are followed. The optimal primary antibody dilutions and diluents are already determined and noted on the product datasheet, saving you from troubleshooting. CST-recommended protocols for both chemiluminescent and fluorescent western blotting are available on our website at [cst-science.com/comp-protocols](http://cst-science.com/comp-protocols). Technical support is also provided by the CST scientists who make the reagents and know them best.

## Secondary Antibodies

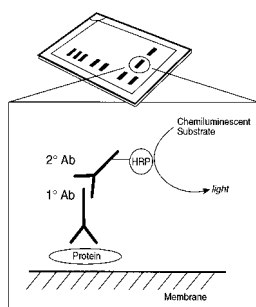
- #7074 Anti-rabbit IgG, HRP-linked Antibody
- #7076 Anti-mouse IgG, HRP-linked Antibody
- #7077 Anti-rat IgG, HRP-linked Antibody
- #7054 Anti-rabbit IgG, AP-linked Antibody
- #7056 Anti-mouse IgG, AP-linked Antibody
- #14708 Anti-rabbit IgG (H+L), Biotinylated Antibody
- #14709 Anti-mouse IgG (H+L), Biotinylated Antibody
- #5257 Anti-mouse IgG (H+L) (DyLight™ 800 4X PEG Conjugate)
- #5151 Anti-rabbit IgG (H+L) (DyLight™ 800 4X PEG Conjugate)
- #5470 Anti-mouse IgG (H+L) (DyLight™ 680 Conjugate)
- #5366 Anti-mouse IgG (H+L) (DyLight™ 680 Conjugate)
- #5597 Anti-biotin (D5A7) Rabbit mAb
- #5571 Anti-biotin (D5A7) Rabbit mAb (HRP Conjugate)
- #7055 Anti-biotin, AP-linked Antibody
- #7075 Anti-biotin, HRP-linked Antibody
- #3678 Mouse Anti-rabbit IgG (Conformation Specific) (L27A9) mAb
- #5127 Mouse Anti-rabbit IgG (Conformation Specific) (L27A9) mAb (HRP Conjugate)
- #45262 Mouse Anti-rabbit IgG (Light-Chain Specific) (D4W3E) mAb
- #93702 Mouse Anti-Rabbit IgG (Light-Chain Specific) (D4W3E) mAb (HRP Conjugate)
- #58802 Rabbit Anti-Mouse IgG (Light Chain Specific) (D3V2A) mAb (HRP Conjugate)
- #46387 Anti-Blue (2D2F11) Mouse mAb (HRP Conjugate)

## Protein Molecular Weight Markers

- #7727 Biotinylated Protein Ladder Detection Pack
- #12949 Color-coded Prestained Protein Marker, High Range (43-315 kDa)
- #13070 Color-coded Prestained Protein Marker, Low Range (1.7-42 kDa)
- #14208 Color-coded Prestained Protein Marker, Broad Range (11-250 kDa)
- #13953 Prestained Protein Marker, Broad Range (11-190 kDa)

## Detection Reagents

- #6883 SignalFire™ ECL Reagent
- #12630 SignalFire™ Plus ECL Reagent
- #12757 SignalFire™ Elite ECL Reagent
- #7003 20X LumiGLO® Reagent and 20X Peroxide
- #7071 Phototope-HRP Western Blot Detection System, Anti-rabbit IgG, HRP-linked Antibody
- #7072 Phototope-HRP Western Blot Detection System, Anti-mouse IgG, HRP-linked Antibody



**20X LumiGLO® Reagent and 20X Peroxide #7003:** After the primary antibody is bound to the target protein, a complex with HRP-linked secondary antibody is formed. The LumiGLO® is added and emits light during enzyme-catalyzed decomposition.

## Cell Fractionation

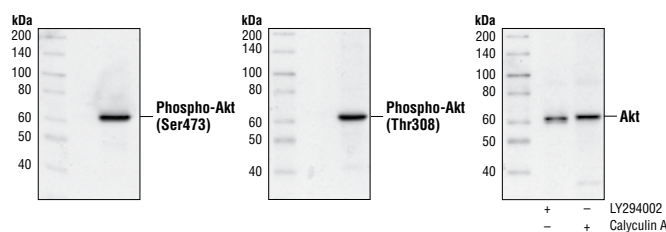
The Cell Fractionation Kit is designed to provide a fast and efficient way of separating cultured cells into three distinct fractions: cytoplasmic, membrane/organelle, and nuclear/cytoskeletal. These fractions can then be analyzed by SDS-PAGE and western blotting.

- #9038 Cell Fractionation Kit
- #11843 Cell Fractionation Antibody Sampler Kit

## Control Cell Extracts & Proteins

Cell extracts are available that can be used as positive and negative controls for our antibodies. For a list of recommended controls for all of our activation state-specific antibodies, visit [cst-science.com/comp-cell-extracts](http://cst-science.com/comp-cell-extracts).

- #9273 Akt Control Cell Extracts
- #9194 p44/42 MAPK (Erk1/2) Control Cell Extracts
- #12052 Smad2/3 Control Cell Extracts
- #9663 Caspase-3 Control Cell Extracts
- #9133 Stat1/2/3/5 Control Cell Extracts
- #9243 NF-κB Control Cell Extracts
- #9193 CREB Control Cell Extracts
- #9253 SAPK/JNK Control Cell Extracts
- #2043 Jurkat Apoptosis Cell Extracts (etoposide)
- #9233 MKK3/MKK6 Control Cell Extracts
- #9160 MEK1/2 Control Cell Extracts
- #11972 LC3 Control Cell Extracts
- #5634 EGF Receptor Control Cell Extracts
- #9213 p38 MAPK Control Cell Extracts
- #9263 c-Jun Control Cell Extracts
- #46362 Mouse Heart Tissue Control Extracts
- #9223 ATF-2 Control Cell Extracts
- #55330 Mouse Brain Tissue Control Extracts
- #2904 VEGF Receptor 2 Control Proteins
- #9293 Bad Control Proteins
- #9303 Rb Control Proteins

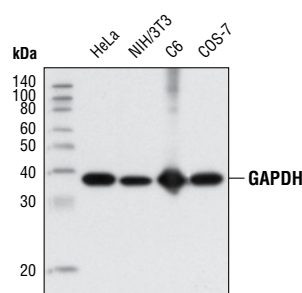


**Akt Control Cell Extracts #9273:** Western blot analysis of extracts from Jurkat cells, Calyculin A or LY294002-treated, using Phospho-Akt (Ser473) Antibody #9271 (left), Phospho-Akt (Thr308) Antibody #9275 (middle), or Akt Antibody #9272 (right).

## Loading Controls

CST offers numerous antibodies that can be used as total protein loading controls. Our loading control antibody sampler kits are an economical means to determine which loading control is best for the system of interest. For example, Loading Control Antibody Sampler Kit (HRP Conjugate) #4670 contains antibodies directed against  $\beta$ -actin,  $\beta$ -tubulin, GAPDH, COX IV, and histone H3, already conjugated to HRP, saving one step in the detection process. Visit [cst-science.com/comp-loading-controls](http://cst-science.com/comp-loading-controls) for the full list of available loading control antibodies.

- #5142 Loading Control Antibody Sampler Kit
- #9774 Loading Control Antibody Sampler Kit (Mouse)
- #4670 Loading Control Antibody Sampler Kit (HRP Conjugate)
- #6487 a-Actinin (D6F6) XP<sup>®</sup> Rabbit mAb
- #2125 a-Tubulin (11H10) Rabbit mAb
- #9099 a-Tubulin (11H10) Rabbit mAb (HRP Conjugate)
- #3873 a-Tubulin (DM1A) Mouse mAb
- #12351 a-Tubulin (DM1A) Mouse mAb (HRP Conjugate)
- #2144 a-Tubulin Antibody
- #2148 a/ $\beta$ -Tubulin Antibody
- #5175 Cofilin (D3F9) XP<sup>®</sup> Rabbit mAb
- #8503 Cofilin (D3F9) XP<sup>®</sup> Rabbit mAb (HRP Conjugate)
- #4850 COX IV (3E11) Rabbit mAb
- #5247 COX IV (3E11) Rabbit mAb (HRP Conjugate)
- #4844 COX IV Antibody
- #2118 GAPDH (14C10) Rabbit mAb
- #3683 GAPDH (14C10) Rabbit mAb (HRP Conjugate)
- #5014 GAPDH (14C10) Rabbit mAb (Biotinylated)
- #5174 GAPDH (D16H11) XP<sup>®</sup> Rabbit mAb
- #8884 GAPDH (D16H11) XP<sup>®</sup> Rabbit mAb (HRP Conjugate)
- #9717 Histone H3 (3H1) Rabbit mAb
- #5192 Histone H3 (3H1) Rabbit mAb (HRP Conjugate)
- #3638 Histone H3 (96C10) Mouse mAb
- #4499 Histone H3 (D1H2) XP<sup>®</sup> Rabbit mAb
- #12648 Histone H3 (D1H2) XP<sup>®</sup> Rabbit mAb (HRP Conjugate)
- #9715 Histone H3 Antibody
- #8456 Pan-Actin (D18C11) Rabbit mAb
- #12748 Pan-Actin (D18C11) Rabbit mAb (HRP Conjugate)
- #4970  $\beta$ -Actin (13E5) Rabbit mAb
- #5125  $\beta$ -Actin (13E5) Rabbit mAb (HRP Conjugate)
- #3700  $\beta$ -Actin (8H10D10) Mouse mAb
- #12262  $\beta$ -Actin (8H10D10) Mouse mAb (HRP Conjugate)
- #8457  $\beta$ -Actin (D6A8) Rabbit mAb
- #12620  $\beta$ -Actin (D6A8) Rabbit mAb (HRP Conjugate)
- #4967  $\beta$ -Actin Antibody
- #2128  $\beta$ -Tubulin (9F3) Rabbit mAb
- #5346  $\beta$ -Tubulin (9F3) Rabbit mAb (HRP Conjugate)
- #2146  $\beta$ -Tubulin Antibody
- #13901 Vinculin (E1E9V) XP<sup>®</sup> Rabbit mAb



**GAPDH (D16H11) XP<sup>®</sup> Rabbit mAb #5174:** Western blot analysis of extracts from various cell lines using #5174.

## Buffers, Reagents, & Other Western Blot Supplies

- #12957 Western Blotting Application Solutions Kit
- #5872 Protease/Phosphatase Inhibitor Cocktail (100X)
- #5870 Phosphatase Inhibitor Cocktail (100X)
- #5871 Protease Inhibitor Cocktail (100X)
- #9803 Cell Lysis Buffer (10X)
- #9806 RIPA Buffer (10X)
- #9852 Chaps Cell Extract Buffer (10X)
- #9808 Phosphate Buffered Saline (PBS-20X)
- #9872 Phosphate Buffered Saline (PBS-1X) pH7.2 (Sterile)
- #8553 PMSF
- #7722 Blue Loading Buffer Pack
- #7723 Red Loading Buffer Pack
- #9997 Tris Buffered Saline with Tween<sup>®</sup> 20 (TBST-10X)
- #12498 Tris Buffered Saline (TBS-10x)
- #4050 Tris-Glycine SDS Running Buffer (10X)
- #12539 Tris-Glycine Transfer Buffer (10X)
- #9998 BSA
- #9999 Nonfat Dry Milk
- #15019 Animal-Free Blocking Solution 5x
- #59803 Ponceau S Staining Solution
- #12369 Nitrocellulose Sandwiches



# Immunoprecipitation

Cell Signaling Technology (CST) provides rigorously validated antibodies for immunoprecipitation (IP), including control, secondary, epitope-tagged, and bead-conjugated antibodies. We also offer reagents, buffers, beads, and other companion products that are thoroughly evaluated for IP experiments.

CST-recommended protocols for IP are available on our website at [cst-science.com/comp-protocols](http://cst-science.com/comp-protocols). Technical support is also provided by the CST scientists who make these products and know them best.

Many of the reagents used in western blot are also validated for use in IP. Check the western blot reagent list on pages 2-3 for more information on these multi-purpose reagents.

## Isotype Control Antibodies

#3900 Rabbit (DA1E) mAb IgG XP® Isotype Control
#3423 Rabbit (DA1E) mAb IgG XP® Isotype Control (Sepharose® Bead Conjugate)
#8726 Rabbit (DA1E) mAb IgG XP® Isotype Control (Magnetic Bead Conjugate)
#4096 Rabbit (DA1E) mAb IgG XP® Isotype Control (Biotinylated)
#2729 Normal Rabbit IgG
#5415 Mouse (G3A1) mAb IgG1 Isotype Control
#5873 Mouse IgG (Magnetic Bead Conjugate)
#3420 Mouse IgG (Sepharose® Bead Conjugate)
#4097 Mouse (MOPC-21) mAb IgG1 Isotype Control (Biotinylated)
#61656 Mouse (E5Y6Q) mAb IgG2a Isotype Control
#37988 Mouse (E1D5H) mAb IgG3 Isotype Control
#53484 Mouse (E7Q5L) mAb IgG2b Isotype Control

## Secondary Antibodies

#3678 Mouse Anti-rabbit IgG (Conformation Specific) (L27A9) mAb
#5127 Mouse Anti-rabbit IgG (Conformation Specific) (L27A9) mAb (HRP Conjugate)
#45262 Mouse Anti-rabbit IgG (Light-Chain Specific) (D4W3E) mAb
#93702 Mouse Anti-Rabbit IgG (Light-Chain Specific) (D4W3E) mAb (HRP Conjugate)
#58802 Rabbit Anti-Mouse IgG (Light Chain Specific) (D3V2A) mAb (HRP Conjugate)
#5946 Anti-mouse IgG (H+L), F(ab') <sub>2</sub> Fragment (Sepharose® Bead Conjugate)
#6990 Anti-rabbit IgG F(ab') <sub>2</sub> Fragment (Sepharose® Bead Conjugate)
#14708 Anti-rabbit IgG (H+L), Biotinylated Antibody
#14709 Anti-mouse IgG (H+L), Biotinylated Antibody

## Epitope Tag Antibodies, Bead Conjugated

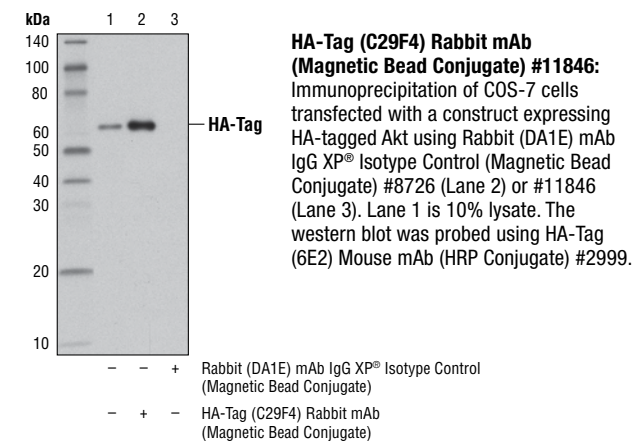
#70569 DYKDDDDK Tag (D6W5B) Rabbit mAb (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Sepharose® Bead Conjugate)
#2908 DYKDDDDK Tag Antibody (Binds to same epitope as Sigma's Anti-FLAG® M2 Antibody) (Biotinylated)
#2912 GFP (D5.1) XP® Rabbit mAb (Biotinylated)
#11847 GST (26H1) Mouse mAb (Magnetic Bead Conjugate)
#5017 HA-Tag (C29F4) Rabbit mAb (Biotinylated)
#11846 HA-Tag (C29F4) Rabbit mAb (Magnetic Bead Conjugate)
#3956 HA-Tag (C29F4) Rabbit mAb (Sepharose® Bead Conjugate)
#8811 His-Tag (27E8) Mouse mAb (Magnetic Bead Conjugate)
#4079 His-Tag (27E8) Mouse mAb (Sepharose® Bead Conjugate)
#15070 His-Tag (D3I10) XP® Rabbit mAb (Biotinylated)
#82437 His-Tag (D3I10) XP® Rabbit mAb (Sepharose® Bead Conjugate)
#3946 Myc-Tag (71D10) Rabbit mAb (Biotinylated)
#5698 Myc-Tag (9B11) Mouse mAb (Magnetic Bead Conjugate)
#3400 Myc-Tag (9B11) Mouse mAb (Sepharose® Bead Conjugate)

## Other Bead Reagents

#9863 Protein A Agarose Beads
#73778 Protein A Magnetic Beads
#37478 Protein G Agarose Beads
#70024 Protein G Magnetic Beads
#5947 Streptavidin (Magnetic Bead Conjugate)
#3419 Streptavidin (Sepharose® Bead Conjugate)

## Buffers, Reagents, & Other IP Supplies

#5872 Protease/Phosphatase Inhibitor Cocktail (100X)
#5870 Phosphatase Inhibitor Cocktail (100X)
#5871 Protease Inhibitor Cocktail (100X)
#9038 Cell Fractionation Kit
#9803 Cell Lysis Buffer (10X)
#9806 RIPA Buffer (10X)
#9808 Phosphate Buffered Saline (PBS-20X)
#9852 Chaps Cell Extract Buffer (10X)
#8553 PMSF
#7017 6-Tube Magnetic Separation Rack
#14654 12-Tube Magnetic Separation Rack



Additional tags, both unconjugated and bead conjugates, may be found on page 3 and at [cst-science.com/comp-tags](http://cst-science.com/comp-tags).

For other IP compatible products, please see our western blot companion products on pages 2-3.

# Immunohistochemistry

Immunohistochemistry (IHC) is used to detect protein expression in tissue samples using chromogenic or fluorescent detection methods. Both of these detection systems rely on antigen recognition mediated by a primary antibody. Our scientists optimize the staining conditions for each IHC-validated product using reagents that are developed to enhance antibody performance.

CST-recommended, product-specific protocols for IHC are available on each individual product page. Technical support is also provided by the CST scientists who make these products and know them best.

## Buffer & Blocking Reagents

#5425 Normal Goat Serum

#9997 Tris Buffered Saline with Tween® 20 (TBST-10X)

#12498 Tris Buffered Saline (TBS-10X)

#9808 Phosphate Buffered Saline (PBS-20X)

#9809 Phosphate Buffered Saline with Tween® 20 (PBST-20X)

#15019 Animal-Free Blocking Solution (5X)

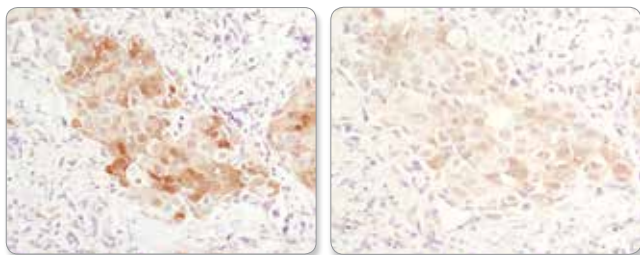
## Antigen Retrieval

#14746 SignalStain® Citrate Unmasking Solution (10X)

#14747 SignalStain® EDTA Unmasking Solution (10X)

## Primary Antibody Diluent

**SignalStain® Antibody Diluent #8112** yields superior staining with many of our IHC-validated antibodies. Please see product data-sheets for diluent recommendations.



**SignalStain® Antibody Diluent #8112:** IHC analysis of paraffin- embedded human breast carcinoma comparing #8112 (left) and TBST with 5% normal goat serum (right) using Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060.

## Mounting & Examination

#14177 SignalStain® Mounting Medium

## Blocking Peptides

CST offers an extensive list of blocking peptides that can be used as controls. Visit [cst-science.com/comp-blockingpep](http://cst-science.com/comp-blockingpep) for a complete listing.

## Detection & Counterstain Reagents

SignalStain® Boost IHC Detection Reagent offers several advantages over conventional ABC detection methods:

- Superior sensitivity, resulting in a stronger signal and greater confidence in your results.
- A reduced number of steps in the detection procedure, saving valuable time.

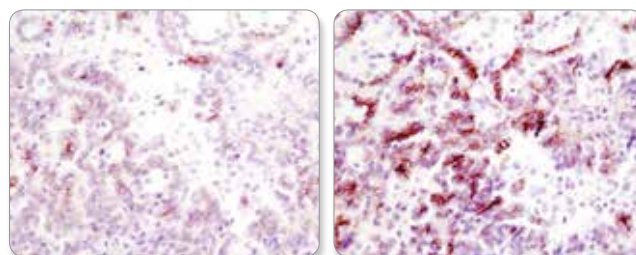
These one-step, highly sensitive detection reagents were developed to enhance sensitivity and eliminate complications arising from false positive staining due to endogenous biotin. SignalStain® Boost IHC Detection Reagents are specific to either rabbit or mouse IgG, can be used to visualize targets in both paraffin-embedded and frozen tissue, and are compatible with all peroxidase-based substrates.

#8114 SignalStain® Boost IHC Detection Reagent (HRP, Rabbit)

#8125 SignalStain® Boost IHC Detection Reagent (HRP, Mouse)

#8059 SignalStain® DAB Substrate Kit

#14166 Hematoxylin



**SignalStain® Boost IHC Detection Reagent (HRP, Rabbit) #8114:** IHC analysis of paraffin-embedded human papillary renal cell carcinoma using Phospho-Met (Tyr1234/1235) (D26) XP® Rabbit mAb #3077 with biotin-based detection (left) or #8114 (right).

## IHC Control Slides

#13747 SignalSlide® PD-L1 IHC Controls

#41965 SignalSlide® Mouse PD-L1 IHC Controls

#8103 SignalSlide® Phospho-p44/42 MAPK (Thr202/Tyr204) IHC Controls

#55861 SignalSlide® HeLa -/+ IFN $\alpha$  IHC Controls

#8101 SignalSlide® Phospho-Akt (Ser473) IHC Controls

#8102 SignalSlide® Phospho-EGF Receptor IHC Controls

#8106 SignalSlide® PTEN IHC Controls

#8104 SignalSlide® Cleaved Caspase-3 (Asp175) IHC Controls

#8117 SignalSlide® Phospho-ErbB Family IHC Controls

# Immunofluorescence

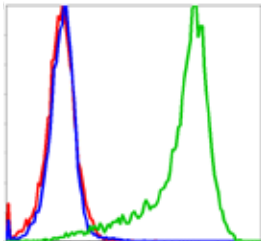
## Flow Cytometry & Fluorescence Imaging

Fluorescence-based detection is commonly employed in applications such as flow cytometry, immunocytochemistry (ICC), immunohistochemistry (IHC), and high-content imaging. Cell Signaling Technology (CST) provides a comprehensive selection of control and secondary antibodies, phenotyping markers, cellular dyes, and other reagents that may be used in one or more of these applications. Each companion product listed here is rigorously evaluated for optional performance in these applications.

CST-recommended protocols for flow cytometry and fluorescence imaging applications are available on our website at [cst-science.com/comp-protocols](http://cst-science.com/comp-protocols).

## Isotype Control Antibodies

Isotype controls are used to estimate nonspecific binding of primary antibodies due to Fc receptor binding or other protein-protein interactions. In order to provide meaningful comparison data, choose an isotype control antibody that has the same immunoglobulin type and fluorescent dye (if applicable) as the test antibody.



Rabbit mAb IgG Isotype Control  
(Alexa Fluor 647<sup>®</sup> Conjugate)

**Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (Alexa Fluor<sup>®</sup> 647 Conjugate) #2985:** Flow cytometric analysis of Jurkat cells, using #2985 (red) compared to Phospho-S6 Ribosomal Protein (Ser235/236) (D57.2.2E) XP<sup>®</sup> Rabbit mAb (Alexa Fluor<sup>®</sup> 647 Conjugate) #4851, untreated (blue) or IFN- $\alpha$ -treated (green).

- #3900 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control
- #2975 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (Alexa Fluor<sup>®</sup> 488 Conjugate)
- #3969 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (Alexa Fluor<sup>®</sup> 555 Conjugate)
- #2985 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (Alexa Fluor<sup>®</sup> 647 Conjugate)
- #30720 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (Alexa Fluor<sup>®</sup> 700 Conjugate)
- #9078 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (Pacific Blue<sup>™</sup> Conjugate)
- #5742 Rabbit (DA1E) mAb IgG XP<sup>®</sup> Isotype Control (PE Conjugate)
- #4340 Rabbit IgG Isotype Control (Alexa Fluor<sup>®</sup> 488 Conjugate)
- #3452 Rabbit IgG Isotype Control (Alexa Fluor<sup>®</sup> 647 Conjugate)
- #5415 Mouse (G3A1) mAb IgG1 Isotype Control
- #9641 Mouse (G3A1) mAb IgG1 Isotype Control (Alexa Fluor<sup>®</sup> 555 Conjugate)

## Immune Cell Phenotyping Markers

Our surface marker antibodies will enable you to fine-tune your surface protein phenotype characterization. Visit [cst-science.com/comp-flow-markers](http://cst-science.com/comp-flow-markers) to select the antibody, or combination of antibodies, that will accurately identify the cell population of interest.

- #8527 Mouse (G3A1) mAb IgG1 Isotype Control (Alexa Fluor<sup>®</sup> 594 Conjugate)
- #14411 Mouse (G3A1) mAb IgG1 Isotype Control (Pacific Blue<sup>™</sup> Conjugate)
- #6899 Mouse (G3A1) mAb IgG1 Isotype Control (PE Conjugate)
- #37988 Mouse (E1D5H) mAb IgG3 Isotype Control
- #61656 Mouse (E5Y6Q) mAb IgG2a Isotype Control
- #53484 Mouse (E7Q5L) mAb IgG2b Isotype Control
- #4878 Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor<sup>®</sup> 488 Conjugate)
- #4843 Mouse (MOPC-21) mAb IgG1 Isotype Control (Alexa Fluor<sup>®</sup> 647 Conjugate)
- #49083 Mouse (MOPC-21) mAb IgG1 Isotype Control (APC Conjugate)
- #31518 Mouse (MOPC-21) mAb IgG1 Isotype Control (APC-Cy7<sup>®</sup> Conjugate)
- #97146 Mouse (MOPC-21) mAb IgG1 Isotype Control (FITC Conjugate)
- #63630 Mouse (MOPC-21) mAb IgG1 Isotype Control (PE Conjugate)
- #79339 Mouse (MOPC-21) mAb IgG1 Isotype Control (PE-Cy7<sup>®</sup> Conjugate)
- #97713 Mouse (MOPC-21) mAb IgG1 Isotype Control (PerCP Conjugate)
- #24589 Mouse (MOPC-21) mAb IgG1 Isotype Control (PerCP-Cy5.5<sup>®</sup> Conjugate)
- #35935 Mouse (MOPC-21) mAb IgG1 Isotype Control (redFluor<sup>™</sup> 710 Conjugate)
- #40282 Mouse (MOPC-21) mAb IgG1 Isotype Control (violetFluor<sup>™</sup> 450 Conjugate)
- #34828 Rat (LTF-2) mAb IgG2b Isotype Control (APC Conjugate)
- #63801 Rat (LTF-2) mAb IgG2b Isotype Control (APC-Cy7<sup>®</sup> Conjugate)
- #27426 Rat (LTF-2) mAb IgG2b Isotype Control (PE Conjugate)
- #43426 Rat (LTF-2) mAb IgG2b Isotype Control (PE-Cy7<sup>®</sup> Conjugate)
- #52572 Rat (LTF-2) mAb IgG2b Isotype Control (violetFluor<sup>™</sup> 450 Conjugate)

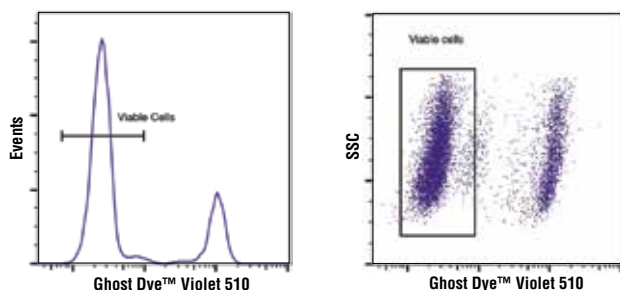
## Buffers & Reagents

- #12727 Immunofluorescence Application Solutions Kit
- #12378 Immunofluorescence Antibody Dilution Buffer
- #12411 Immunofluorescence Blocking Buffer
- #12528 10X Wash Buffer, Phosphate Buffered Saline (PBS)
- #12606 16% Formaldehyde, Methanol-Free
- #5425 Normal Goat Serum
- #9998 BSA
- #13604 Methanol
- #8961 ProLong<sup>®</sup> Gold Antifade Reagent with DAPI
- #9071 ProLong<sup>®</sup> Gold Antifade Reagent
- #11932 Image-IT<sup>®</sup> FX Signal Enhancer
- #12388 BackDrop<sup>®</sup> Green Background Suppressor
- #13593 Intracellular Flow Cytometry Kit (Methanol)
- #13616 Flow Cytometry Antibody Dilution Buffer
- #12528 10X Wash Buffer, Phosphate Buffered Saline (PBS)
- #47746 4% Formaldehyde, Methanol-Free

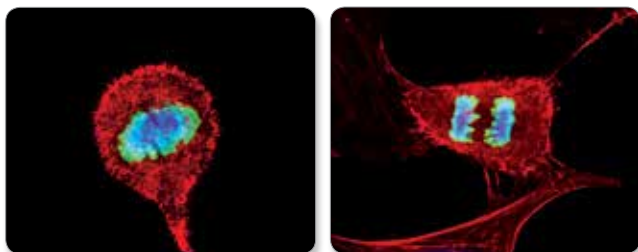


## Cellular Dyes

- #18452 Ghost Dye™ Red 780 Viability Dye
- #49826 Ghost Dye™ Violet 450 Viability Dye
- #59863 Ghost Dye™ Violet 510 Viability Dye
- #72086 Ghost Dye™ Violet 540 Viability Dye
- #90232 Ghost Dye™ Red 710 Viability Dye
- #7406 DRAQ7™
- #4084 DRAQ5®
- #4087 Propidium Iodide (PI)/RNase Staining Solution
- #4083 DAPI
- #8878 Alexa Fluor® 488 Phalloidin
- #8953 Alexa Fluor® 555 Phalloidin
- #8940 Alexa Fluor® 647 Phalloidin
- #12848 DyLight™ 350 Phalloidin
- #12935 DyLight™ 488 Phalloidin
- #13054 DyLight™ 554 Phalloidin
- #12877 DyLight™ 594 Phalloidin
- #12956 DyLight™ 650 Phalloidin
- #9074 MitoTracker® Green FM
- #9082 MitoTracker® Red CMXRos
- #8778 MitoTracker® Deep Red FM
- #8783 LysoTracker® Green DND-26
- #8787 ER-Tracker™ Green (BODIPY® FL Glibenclamide)
- #4082 Hoechst 33342



**Ghost Dye™ Violet 510 Viability Dye #59863:** Flow cytometric analysis of live and fixed/permeabilized human peripheral blood mononuclear cells, combined and stained with #59863. Viable gate is indicated.



**Phospho-Histone H3 (Ser10) (D2C8) XP® Rabbit mAb #3377:** Confocal IF analysis of HeLa cells using #3377 (green). Actin filaments have been labeled with DyLight™ 554 Phalloidin #13054 (red). Blue pseudocolor = DRAQ5® #4084 (fluorescent DNA dye).

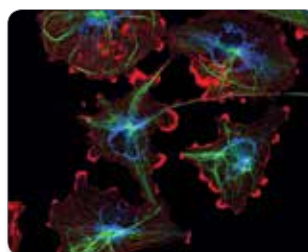
## Secondary Antibodies

- #4408 Anti-mouse IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 488 Conjugate)
- #4409 Anti-mouse IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 555 Conjugate)
- #8890 Anti-mouse IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 594 Conjugate)
- #4410 Anti-mouse IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 647 Conjugate)
- #8887 Anti-mouse IgG (H+L), F(ab)<sub>2</sub> Fragment (PE Conjugate)
- #4412 Anti-rabbit IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 488 Conjugate)
- #4413 Anti-rabbit IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 555 Conjugate)
- #8889 Anti-rabbit IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 594 Conjugate)
- #4414 Anti-rabbit IgG (H+L), F(ab)<sub>2</sub> Fragment (Alexa Fluor® 647 Conjugate)
- #8885 Anti-rabbit IgG (H+L), F(ab)<sub>2</sub> Fragment (PE Conjugate)
- #4416 Anti-rat IgG (H+L), (Alexa Fluor® 488 Conjugate)
- #4417 Anti-rat IgG (H+L), (Alexa Fluor® 555 Conjugate)
- #4418 Anti-rat IgG (H+L), (Alexa Fluor® 647 Conjugate)

## Organelle Markers

Organelle-specific antibodies listed here will help you confirm the location of intracellular proteins of interest and assess potential links between two or more proteins. These organelle markers are powerful tools for immunofluorescent colocalization studies and can also be used as western blot controls for fractionated cell lysates. For additional organelle marker antibodies, including conjugates, visit [cst-science.com/comp-organelles](http://cst-science.com/comp-organelles).

- #12741 LC3A/B (D3U4C) XP® Rabbit mAb
- #3288 EEA1 (C45B10) Rabbit mAb
- #3501 PDI (C81H6) Rabbit mAb
- #12290 RCAS1 (D2B6N) XP® Rabbit mAb
- #4545 Pan-Keratin (C11) Mouse mAb
- #5741 Vimentin (D21H3) XP® Rabbit mAb
- #5118 Rab9A (D52G8) XP® Rabbit mAb
- #9091 LAMP1 (D2D11) XP® Rabbit mAb
- #3700 β-Actin (8H10D10) Mouse mAb
- #3873 α-Tubulin (DM1A) Mouse mAb
- #11967 COX IV (4D11-B3-E8) Mouse mAb
- #4777 Lamin A/C (4C11) Mouse mAb
- #14574 Nucleolin (D4C70) Rabbit mAb
- #12980 Catalase (D4P7B) XP® Rabbit mAb
- #5589 Rab11 (D4F5) XP® Rabbit mAb



Confocal IF analysis of SNB19 cells using β-Actin (8H10D10) Mouse mAb #3700 (red), Vimentin (D21H3) XP® Rabbit mAb (Alexa Fluor® 488 Conjugate) #9854 (green), COX IV (3E11) Rabbit mAb (Alexa Fluor® 647 Conjugate) #7561 (blue), and ProLong® Gold Antifade Reagent #9071

# Chromatin Immunoprecipitation and ChIP-seq

Cell Signaling Technology (CST) can meet all your chromatin immunoprecipitation (ChIP) needs, big or small, from providing a complete kit with all the reagents and controls needed to perform a ChIP experiment via sonication or enzymatic digestion, to providing individual buffers for specific parts of the ChIP experiment. We have more than 300 antibodies validated for ChIP and more than 100 validated for ChIP-seq. We also have 120 primers and Universal qPCR Master Mix to perform qPCR on your ChIP-DNA, as well as DNA Library Prep Kits and Multiplex Oligos if you are prepping your ChIP-DNA for NGS instead. The best part of all these reagents is that they are the very ones we use in-house to validate our own antibodies for ChIP and ChIP-seq, proving that they are all compatible with each other and generate high-quality ChIP data.

CST-recommended protocols for ChIP and ChIP-seq are available on our website at [cst-science.com/comp-protocols](http://cst-science.com/comp-protocols). Each protocol is detailed and easy to follow with well-marked stopping points, so you can use them with confidence. Technical support is also provided by the CST scientists who make our ChIP products and know them best.

## Cross-linking, Fragmentation, IP, & DNA Purification

#56383 SimpleChIP® Plus Sonication Chromatin IP Kit

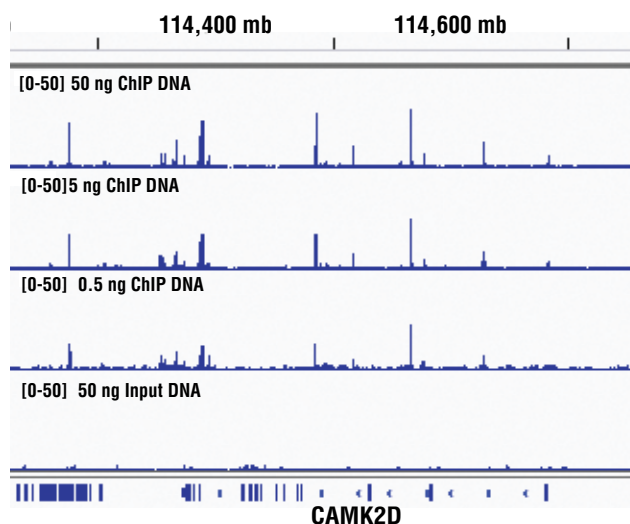
#9003 SimpleChIP® Enzymatic Chromatin IP Kit (Magnetic Beads)

#9005 SimpleChIP® Plus Enzymatic Chromatin IP Kit (Magnetic Beads)

#9002 SimpleChIP® Enzymatic Chromatin IP Kit (Agarose Beads)

#9004 SimpleChIP® Plus Enzymatic Chromatin IP Kit (Agarose Beads)

#12931 Nuclease-free Water



**SimpleChIP® ChIP-seq DNA Library Prep Kit for Illumina® #56795:** Chromatin immunoprecipitations were performed with cross-linked chromatin from  $4 \times 10^6$  HCT 116 cells and TCF4/TCF7L2 (C48H11) Rabbit mAb #2569, using SimpleChIP® Plus Enzymatic Chromatin IP Kit (Magnetic Beads) #9005. DNA libraries were prepared from 50 ng, 5 ng, or 0.5 ng enriched ChIP DNA or 50 ng Input DNA using #56795 and SimpleChIP® ChIP-seq Multiplex Oligos for Illumina® (Dual Index Primers) #47538, pooled into one sample, and sequenced on an Illumina® Next-Seq platform. The figure shows binding across CaMK2D, a known target gene of TCF4/TCF7L2. For additional ChIP-seq tracks, please download the product data sheet.

## Fragmentation

#81804 SimpleChIP® Sonication Cell and Nuclear Lysis Buffers

#14282 SimpleChIP® Enzymatic Cell Lysis Buffers A & B

#10011 Micrococcal Nuclease

## Immunoprecipitation Reagents (for ChIP)

CST offers **>300 antibodies validated for ChIP and >100 validated for ChIP-seq.**

#4620 Histone H3 (D2B12) XP® Rabbit mAb (ChIP Formulated)

#3900 Rabbit (DA1E) mAb IgG XP® Isotype Control

#5415 Mouse (G3A1) mAb IgG1 Isotype Control

#2729 Normal Rabbit IgG

#14231 SimpleChIP® Chromatin IP Buffers

#9006 ChIP-Grade Protein G Magnetic Beads

#9007 ChIP-Grade Protein G Agarose Beads

#7017 6-Tube Magnetic Separation Rack

#14654 12-Tube Magnetic Separation Rack

Visit [cst-science.com/comp-chip-primary](http://cst-science.com/comp-chip-primary) for the full list of ChIP primary antibodies.

Visit [cst-science.com/comp-chipseq-primary](http://cst-science.com/comp-chipseq-primary) for the complete list of ChIP-seq antibodies.

## DNA Purification Reagents

#14209 SimpleChIP® DNA Purification Buffers and Spin Columns

## qPCR Reagents

CST offers **>120 SimpleChIP® Control Primers.**

#88989 SimpleChIP® Universal qPCR Master Mix

Visit [cst-science.com/comp-chip-primer](http://cst-science.com/comp-chip-primer) for the complete list of ChIP-qPCR primers.

## DNA Library Prep for NGS on Illumina®

#56795 SimpleChIP® ChIP-seq DNA Library Prep Kit for Illumina®

#29580 SimpleChIP® ChIP-seq Multiplex Oligos for Illumina® (Single Index Primers)

#47538 SimpleChIP® ChIP-seq Multiplex Oligos for Illumina® (Dual Index Primers)

# Activators, Inhibitors and Other Companion Reagents

## Activators & Inhibitors

For signaling readouts, it is essential to have positive and negative controls to understand the range of biological response to stimuli. CST provides chemical modulators to enable you to assess the dynamic range of your system, which is useful for measuring changes in activation states and total protein expression.

#9953 Staurosporine	#16483 Ibrutinib	#12060 Gö6976
#60332 Z-VAD(OMe)-FMK	#14704 Tyrphostin AG-490	#2222 Anisomycin
#14774 Chloroquine	#14703 Tofacitinib	#9052 Dasatinib
#54645 Bafilomycin A1	#9903 U0126	#9084 Imatinib
#29089 SBI-0206965	#5633 SB203580	#12147 PD184352
#3828 Forskolin	#9900 PD98059	#13630 IBMX
#4174 TPA (12-O-Tetradecanoylphorbol-13-Acetate)	#17531 Vemurafenib	#13621 SB216763
#9995 Ionomycin, Calcium Salt	#9996 Oligomycin	#13637 Camptothecin
#9844 H-89, Dihydrochloride	#9944 AICAR	#8132 17-AAG
#9841 Bisindolylmaleimide I, Hydrochloride	#15020 DAPT	#9493 PKC412
#12754 K252a	#14776 Dexamethasone	#8705 Sorafenib
#11916 Chelerythrine Chloride	#9901 LY294002	#4765 Gefitinib
#12808 PDBu (Phorbol 12,13-Dibutyrate)	#9904 Rapamycin	#12121 Lapatinib
#9902 Calyculin A	#9951 Wortmannin	#5083 Erlotinib
#15021 Actinomycin D	#14240 Perifosine	#12328 Sunitinib
#9807 Paclitaxel	#13101 NVP-BEZ235	#4401 Crizotinib
#9885 Roscovitine	#13213 ZSTK474	#12466 Pazopanib
#9886 Docetaxel	#13055 PX-866	#9842 Tyrphostin AG 1478
#14255 Vinblastine	#9843 Geldanamycin	#12961 Axitinib
#13043 Vincristine	#9676 Leptomycin B	#12209 Nilotinib
#12986 Epothilone B	#5934 Okadaic Acid	#12998 Vatalanib
#9950 Trichostatin A (TSA)	#2112 Cycloheximide	#12616 Vandetanib
#12520 Vorinostat (SAHA)	#13624 Y-27632	#12819 Tunicamycin
#46080 UNC1999	#2194 MG-132	#12758 Thapsigargin
#66244 GSK343	#8177 SP600125	#14379 Torin 1
#9972 Brefeldin A	#2200 Etoposide	#14385 Torin 2
#14775 SB431542	#2204 Bortezomib	#12017 Everolimus
#14011 Lipopolysaccharides (LPS)	#8158 SB202190	#15022 Carfilzomib
#9974 FK-506	#5927 Doxorubicin	
#9973 Cyclosporin A	#2190 Nocodazole	

Visit [cst-science.com/activators-inhibitors](http://cst-science.com/activators-inhibitors) for the full list of activators and inhibitors.

## SignalSilence® siRNA Reagents

SignalSilence® siRNA reagents allow the researcher to specifically inhibit protein expression. Two equally potent siRNAs are available for most targets. Visit [cst-science.com/comp-sirna](http://cst-science.com/comp-sirna) for the complete list of SignalSilence® siRNA Reagents.

## Cytokines & Growth Factors

CST offers recombinant cytokines and growth factors which are held to the same high-quality standards as CST antibodies. Visit [cst-science.com/comp-cytokines](http://cst-science.com/comp-cytokines) for the complete list of cytokines and growth factors.



Founded by research scientists in 1999, Cell Signaling Technology (CST) is a private, family owned company with over 400 employees worldwide. Active in the field of applied systems biology research, particularly as it relates to cancer, CST understands the importance of using antibodies with high levels of specificity and lot-to-lot consistency. That's why we produce all of our antibodies in house and perform painstaking validations for multiple applications. And the same CST scientists who produce our antibodies also provide technical support for customers, helping them design experiments, troubleshoot, and achieve reliable results.

**Technical Support:** [www.cellsignal.com/support](http://www.cellsignal.com/support)

**Ordering Information:** [www.cellsignal.com/orderinfo](http://www.cellsignal.com/orderinfo)

For a complete list of CST offices and distributors, please visit [www.cellsignal.com/contactus](http://www.cellsignal.com/contactus)

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Alexa primary conjugates: The Alexa Fluor dye conjugates are sold under license from Life Technologies Corporation, for research use only excluding use in combination with DNA microarrays and high content screening (HCS). Alexa secondary conjugates: The Alexa Fluor dye antibody conjugates are sold under license from Life Technologies Corporation, for research use only for immunocytochemistry, immunohistochemistry, HCS analysis, or flow cytometry applications.

♻️ Printed on recycled paper (25% post-consumer waste fiber) using vegetable inks and processed chlorine free.



[www.cellsignal.com](http://www.cellsignal.com)

CST Antibody Performance Guarantee: To learn more, please visit: [www.cellsignal.com/abguarantee](http://www.cellsignal.com/abguarantee).

