

# PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout)



✓ 1 Kit  
(32 multiplexed assays)

**Orders** ■ 877-616-CELL (2355)  
orders@cellsignal.com  
**Support** ■ 877-678-TECH (8324)  
info@cellsignal.com  
**Web** ■ www.cellsignal.com

rev. 02/22/16

**For Research Use Only. Not For Use In Diagnostic Procedures.**

## Species Cross-Reactivity: H

**Description:** The PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout) is a slide-based antibody array founded upon the sandwich immunoassay principle. The array kit allows for the simultaneous detection of 18 important and well-characterized signaling molecules when phosphorylated or cleaved. Target-specific capture antibodies have been spotted in duplicate onto nitrocellulose-coated glass slides. Each kit contains two 16-pad slides, allowing the user to test up to 32 samples and generate 576 data points in a single experiment. Cell lysate is incubated on the slide followed by a biotinylated detection antibody cocktail. Streptavidin-conjugated HRP and LumiGLO® Reagent are then used to visualize the bound detection antibody by chemiluminescence. An image of the slide can be captured with either a digital imaging system or standard chemiluminescent film. The image can be analyzed visually or the spot intensities quantified using array analysis software.

**Specificity/Sensitivity:** PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout) detects the indicated cellular proteins and signaling nodes only when phosphorylated or cleaved at the specified residues. (see Array Target Map). No significant cross-reactivity has been observed between targets. This kit is optimized for cell lysates diluted to a total protein concentration between 0.2 and 1 mg/ml (see kit protocol).

Products Included	Quantity	Cap Color
Array Slides	2 slides	
Multi-Well Gasket	2 gaskets	
Sealing Tape	2 sheets	
Chemiluminescent Development Folder	2 folders	
20X Array Wash Buffer	15 ml	White
Array Blocking Buffer	5 ml	Red
Array Diluent Buffer	15 ml	Blue
10X Detection Antibody Cocktail	300 µl	White
10X HRP-linked Streptavidin	300 µl	Clear
20X LumiGLO® Reagent A #7003	5 ml	Brown
20X Peroxide Reagent B #7003	5 ml	Clear
*Cell Lysis Buffer #7018	30 ml	Clear

\*Kit should be stored at 4°C with the exception of 1X Cell Lysis Buffer, which is stored at -20°C (packaged separately).

## Intracellular Signaling

Target	Phosphorylation Site	Modification
1 Positive Control	N/A	N/A
2 Negative Control	N/A	N/A
3 ERK1/2	Thr202/Tyr204	Phosphorylation
4 Stat1	Tyr701	Phosphorylation
5 Stat3	Tyr705	Phosphorylation
6 Akt	Thr308	Phosphorylation
7 Akt	Ser473	Phosphorylation
8 AMPKα	Thr172	Phosphorylation
9 S6 Ribosomal Protein	Ser235/236	Phosphorylation
10 mTOR	Ser2448	Phosphorylation
11 HSP27	Ser78	Phosphorylation
12 Bad	Ser112	Phosphorylation
13 p70 S6 Kinase	Thr389	Phosphorylation
14 PRAS40	Thr246	Phosphorylation
15 p53	Ser15	Phosphorylation
16 p38	Thr180/Tyr182	Phosphorylation
17 SAPK/JNK	Thr183/Tyr185	Phosphorylation
18 PARP	Asp214	Cleavage
19 Caspase-3	Asp175	Cleavage
20 GSK-3β	Ser9	Phosphorylation

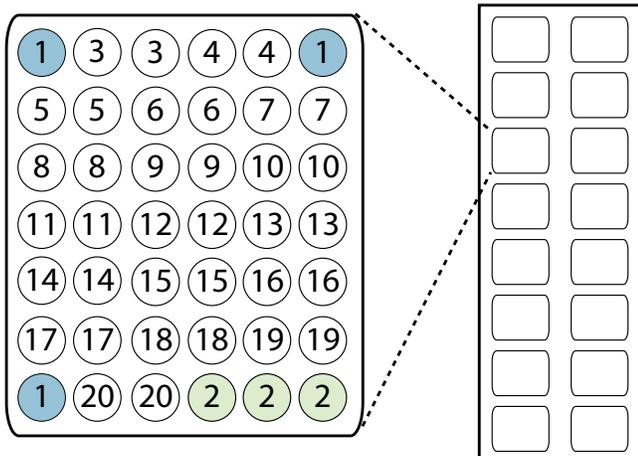


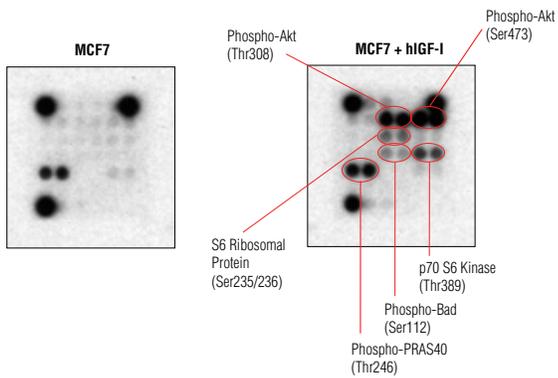
Figure 1. Target map of the PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout) #7323.

U.S. Patent No. 5,675,063  
LumiGLO is a registered trademark of Kirkegaard & Perry Laboratories.

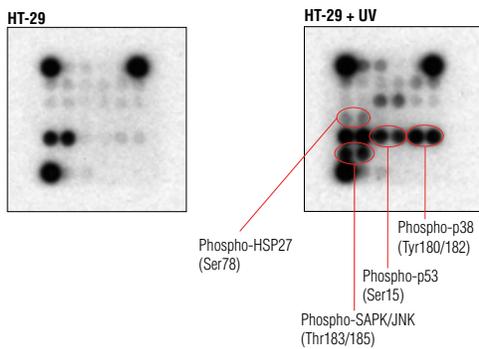
**Applications Key:** W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide

**Species Cross-Reactivity Key:** H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebrafish B—bovine

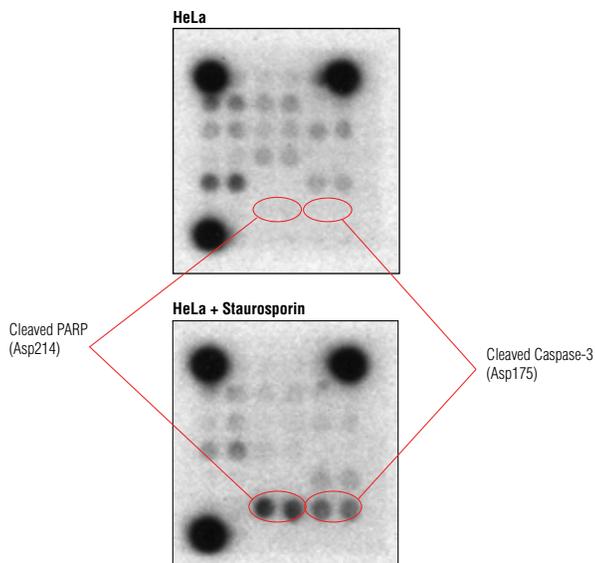
Dg—dog Pg—pig Sc—S. cerevisiae All—all species expected Species enclosed in parentheses are predicted to react based on 100% sequence homology.



**Figure 2.** MCF7 cells were grown to 80% confluency and then serum starved overnight. Cells were either untreated (left panel) or treated with Human Insulin-like Growth Factor I (hIGF-I) #8917 (100 ng/ml, 20 min). Cell extracts were prepared and analyzed using the PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout) #7323. Images were acquired by briefly exposing the slide to standard chemiluminescent film.



**Figure 3.** HT-29 cells were grown to 80% confluency and then either untreated (left panel) or UV-irradiated and allowed to recover for 60 min (right panel). Cell extracts were prepared and analyzed using the PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout) #7323. Images were acquired by briefly exposing the slide to standard chemiluminescent film.



**Figure 4.** HeLa cells were grown to 90% confluency and then either untreated (upper panel) or treated with Staurosporine #9953 (1 μM, 3.5 hr, lower panel). Cell extracts were prepared and analyzed using the PathScan® Intracellular Signaling Array (Chemiluminescent Readout) #7323. Images were acquired by briefly exposing the slide to standard chemiluminescent film.

**Background:** Phosphorylation and proteolysis are two widespread covalent post-translational modifications that represent important regulatory mechanisms in biology. Detection of these modifications on a set of cellular proteins playing a well-understood role in cell biology can provide a broad snapshot of intracellular signaling.

The MAPK/Erk cascade is one of the best characterized and widely studied signaling modules. It is involved in a broad range of cellular processes such as proliferation, differentiation, and motility. MAPK/Erk is activated by a wide range of extracellular signals including growth factors, cytokines, hormones, and neurotransmitters. It is activated by dual phosphorylation at Thr202 and Tyr204 by the dual specificity kinases MEK1 and MEK2.

p38 and JNK MAPKs are core components of two additional structurally related signal transduction modules. p38 and JNK are activated through a similar dual phosphorylation mechanism by various MAPK kinases in response to pro-inflammatory cytokines, stressful conditions, or genotoxicity.

Stat1 and Stat3 are important signaling molecules that are involved in immunity and inflammation and can be activated by a variety of cytokines or growth factors. Stat1 and Stat3 are phosphorylated at Tyr701 or Tyr705, respectively, by cytokine receptor-tethered tyrosine kinases of the Jak family or, in some cases, by other tyrosine kinases such as Src.

Akt is a protein kinase generally activated in response to growth factor stimulation that transmits growth and survival signals. Phosphorylation of Akt at Ser473 and Thr308 by TORC2 complex and PDK1, respectively, are reliable predictors of Akt activation. Phosphorylation of PRAS40 at Thr246 by Akt relieves PRAS40 inhibition of TORC1. Akt phosphorylation of the pro-apoptotic protein Bad at Ser112 and the multifunctional kinase GSK-3 at Ser9 inhibits their activity and promotes cell survival.

mTOR is an important signaling hub that is a major component of two macromolecular complexes, TORC1 and TORC2. mTOR is phosphorylated at Ser2448 and integrates growth factor signaling and nutrient availability, thus playing an important role in cell growth and homeostasis. mTORC1 phosphorylates p70 S6 Kinase at Thr389, leading to kinase activation and cell cycle progression. The S6 ribosomal protein is found downstream of p70 S6 Kinase and its phosphorylation at Ser235/236 reflects mTOR pathway activation and predicts cell cycle progression.

AMPK is an energy sensor that is activated by phosphorylation at Thr172 in response to elevated AMP levels. AMPK regulates fatty acid metabolism, as well as modulates protein synthesis and cell growth.

HSP27 is a mediator of cell stress that confers resistance to adverse environmental change. HSP27 is phosphorylated at Ser78 within the p38 MAPK pathway.

p53 plays an important role in cellular response to DNA damage and other genomic aberrations. Phosphorylation of p53 at Ser15 by ATM/ATR or DNA-PK in response to DNA damage leads to its stabilization and accumulation.

Caspase-3 is a critical executor of apoptosis. Caspase-3 is activated by endoproteolytic cleavage at Asp175 and exerts its pro-apoptotic activity through cleavage of multiple cellular targets. PARP, an enzyme that is involved in DNA repair, is one of the main substrates of activated caspase-3. Cleavage at Asp214 leads to PARP inactivation. Increased levels of cleaved caspase-3 and cleaved PARP are reliable indicators of apoptosis.

## PathScan® Intracellular Signaling Array Kit (Chemiluminescent Readout) Protocol

### A Preparing Cell Lysates

1. Thaw 1X Cell Lysis Buffer #7018 and mix thoroughly. Supplement Cell Lysis Buffer with phenylmethylsulfonyl fluoride (PMSF) to a final concentration of 1 mM, or a cocktail of protease inhibitors (not included). Keep lysis buffer on ice.
2. Remove media and wash cells once with ice-cold 1X PBS.
3. Remove PBS and add ice-cold Cell Lysis Buffer. For adherent cells, use 0.5 ml cell lysis buffer for each plate (10 cm in diameter). Incubate on ice for 2 minutes.
4. Tilt the plate and collect the lysate into a clean micro tube.
5. Optional step: microcentrifuge the lysate at maximum speed for 3 minutes at 4°C and transfer the supernatant to a new tube. This step is usually not required but can help remove any particles or large cell debris, if present. Lysate may be used immediately or stored at -80°C in single-use aliquots.
6. Immediately before performing the assay, dilute lysates to 0.2 – 1.0 mg/ml in Array Diluent Buffer. Set aside on ice.

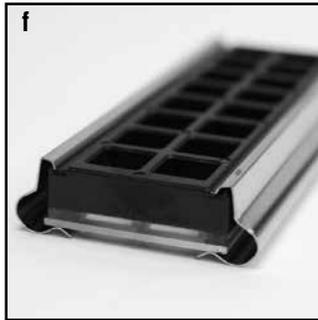
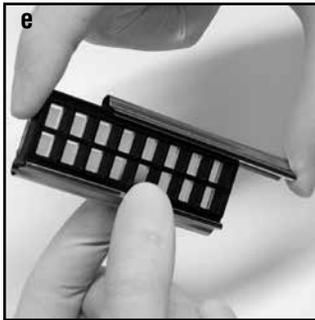
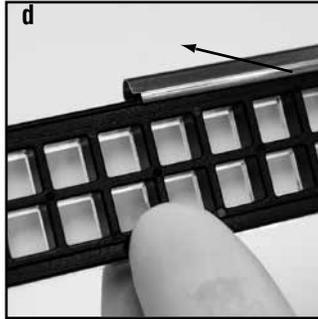
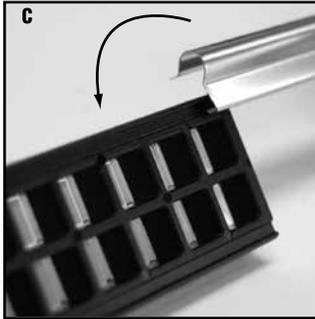
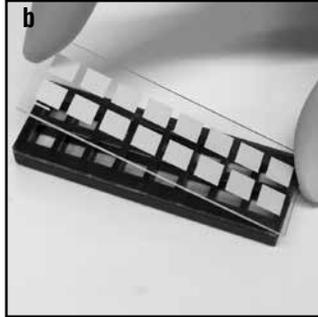
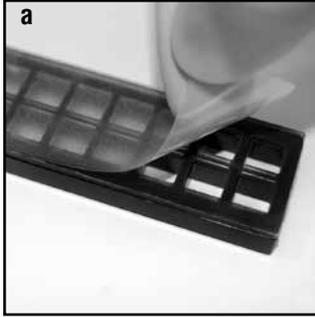
### B Assay Procedure

1. Bring glass slides and blocking buffer to room temperature before use.
  2. Prepare 1X Array Wash Buffer by diluting 20X Array Wash Buffer in deionized water. Keep at room temperature. Dilute 1 mL of 20X Array Wash Buffer with 19 mL of deionized water. Label as 1X Array Wash Buffer.
  3. Prepare 1X Detection Antibody Cocktail as follow:  
For running only **1 slide**: Dilute 150 µL of 10X Detection Antibody Cocktail with 1350 µL of Array Diluent Buffer.  
For running **2 slides**: Dilute 300 µL of 10X Detection Antibody Cocktail with 2700 µL of Array Diluent Buffer. \*Keep on ice.
  4. Prepare 1X HRP-linked Streptavidin as follow:  
For running only **1 slide**: Dilute 150 µL of 10X HRP-linked Streptavidin with 1350 µL of Array Diluent Buffer.  
For running **2 slides**: Dilute 300 µL of 10X HRP linked Streptavidin with 2700 µL of Array Diluent Buffer. \*Keep on ice.
  5. Affix the multi-well gasket to the glass slide (see figure at right):
    - a. Place the multi-well gasket face-down on the benchtop (the silicone layer should be facing up). Remove the protective plastic film.
    - b. Carefully place the glass slide on top of the multi-well gasket with the nitro-cellulose pads facing down while aligning the pads with the openings in the gasket. The orientation line should appear in the upper left hand corner when the slide is oriented vertically.
    - c. Insert the metal clip into the groove in the gasket and rotate the clip into the locked position. Ensure that the clip is on the same side as the orientation line on the slide.
- Note:** one of the clips has a small dot etched onto the upper rib to assist with pad designation (see slide assembly photos).
- d. Slide the clip into place.
  - e. Snap the second metal clip to the other side of the assembly in the same manner and slide into place.
  - f. The assembled array is ready to use.
6. Add 100 µl Array Blocking Buffer to each well and cover with sealing tape. Incubate for 15 minutes at room temperature on an orbital shaker.  
**Note:** Do not allow the pads to dry out at any time during the assay.
  7. Decant Array Blocking Buffer by gently flicking out the liquid into a sink or other appropriate waste receptacle. Add 50 -75 µl diluted lysate to each well and cover with sealing tape. Incubate for 2 hours at room temp (or overnight at 4°C) on an orbital shaker.
  8. Decant well contents by gently flicking out the liquid into a sink or other appropriate waste receptacle. Add 100 µl (1X) Array Wash Buffer to each well and incubate for 5 minutes at room temperature on an orbital shaker. Repeat three more times. Decant well contents.
  9. Add 75 µl (1X) Detection Antibody Cocktail to each well and cover with sealing tape. Incubate for 1 hour at room temperature on an orbital shaker.
  10. Wash 4 X 5 minutes with 100 µl (1X) Array Wash Buffer as in step 8.
  11. Add 75 µl (1X) HRP-linked Streptavidin to each well and cover with sealing tape.

- Incubate for 30 minutes at room temperature on an orbital shaker.
12. Wash 4 X 5 minutes with 100 µl (1X) Array Wash Buffer as in step 8.
  13. Remove multi-well gasket by pulling the bottom of the metal clips away from the center of the slide, then peeling the slide and gasket apart.
  14. Place the slide face up in a plastic dish (a clean pipette tip box cover works well). Wash briefly with 10 ml (1X) Array Wash Buffer.
  15. Dilute and combine LumiGLO® and Peroxide reagents immediately before use (to make 10 ml of a 1X solution, combine 9 ml deionized water with 0.5 ml of 20X LumiGLO® and 0.5 ml of 20X Peroxide). Note for Kodak Biomax film users: This dilution of LumiGLO®/Peroxide may necessitate very short exposure times (2-3 seconds) for some targets. For more convenient exposure times (20-30 seconds) add 20 ml of deionized water to the 10 ml LumiGLO®/Peroxide mix to make a 3 fold more diluted chemiluminescent reagent.
  16. Decant Array Wash Buffer and cover slide with LumiGLO®/Peroxide reagent.
  17. Transfer slide to chemiluminescent development folder, ensuring that it is still covered by LumiGLO®/ Peroxide reagent (add a small amount on top of the slide).
  18. Immediately capture an image of the slide using a digital imaging system capable of detecting chemiluminescent signals. If desired, quantify spot intensities using commercially available array image analysis software. Alternatively, chemiluminescent film may be used. Expose film for 2-30 seconds using even and light pressure on the top of the development cassette (do not fasten the cassette clamps) to avoid squeezing out the LumiGLO®/ Peroxide reagent. Develop the film using an automated film developer.  
**Note:** If both slides are being used, it is not recommended to expose them simultaneously in the same development cassette. In this case, leave the second slide in the wash buffer (step 12) while proceeding with steps 13-18 using the first slide. After the first slide is finished, proceed with steps 13-18 using the second slide and freshly diluted LumiGLO®/Peroxide reagent.

LumiGLO® is a registered trademark of Kirkegaard & Perry Laboratories.

# #7323



# Material Safety Data Sheet (MSDS) for PathScan® Intracellular Signaling Antibody Array Kit



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**Product name:** PathScan® Intracellular Signaling Antibody Array Kit

**Product Catalog:** 7744, 7323 Kits

**Manufacturer Supplier:** Cell Signaling Technology  
3 Trask Lane  
Danvers, MA 01923 USA  
978-867-2300 TEL  
978-867-2400 FAX  
978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**Substance Name:** PathScan® Intracellular Signaling Antibody Array Kit

**CAS#:** None

**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous. Please refer to the individual material safety data sheets for hazard information specific to kit components.

- Array Slides MSDS
- PathScan® Sandwich ELISA Lysis Buffer (1X) (CST#7018) MSDS
- Array Blocking Buffer MSDS
- Array Diluent Buffer MSDS
- Array Wash Buffer MSDS
- Detection Antibody Cocktail MSDS
- HRP-linked Streptavidin MSDS (Kit 7323 only)
- DyLight 680™-linked Steptavidin MSDS (Kit 7744 only)
- 20X LumiGLO & 20X Peroxide (CST#7003) MSDS

## III. Hazard Identification:

### Emergency Overview:

Not considered hazardous.

Not expected to produce significant adverse health effects when the recommended instructions for use are followed. No known significant effects or critical hazards.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.

**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.

**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.

**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion:** Not applicable.

**Fire extinguishing media:** Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

**Storage:** Store kit in tightly closed container at 4°C.

**VIII - XIII.** Refer to individual MSDS for kit components for Sections 8-13 information: Exposure Controls/Personal Protection, Physical and Chemical Properties, Stability and Reactivity, Toxicological Information, Ecological information, Disposal Considerations.

## XIV. Transport Information:

**DOT: Proper Shipping Name:** None.

This substance is considered Non-Hazardous for transport.

**IATA: Proper Shipping Name:** None.

This substance is considered Non-Hazardous for air transport.

## XV. Regulatory Information:

**EU Regulations/Classifications:** Xi. Irritant.

**Risk Phrases:** Irritant. Irritating to eyes and skin. Harmful if swallowed.

**Safety Phrases:** In case of contact wash with water and seek medical attention.

**US Regulatory Information:** Irritant.

## XVI. Other Information:

This product is not intended for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.

# Material Safety Data Sheet (MSDS) for PathScan® Intracellular Signaling Antibody Array Kit



## I. Identification:

**Product name:** PathScan® Intracellular Signaling Antibody Array Kit  
**Product Catalog:** 7744, 7323 Kits  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**Substance Name:** PathScan® Intracellular Signaling Antibody Array Kit  
**CAS#:** None  
**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous. Please refer to the individual material safety data sheets for hazard information specific to kit components.

- Array Slides MSDS
- PathScan® Sandwich ELISA Lysis Buffer (1X) (CST47018) MSDS
- Array Blocking Buffer MSDS
- Array Diluent Buffer MSDS
- Array Wash Buffer MSDS
- Detection Antibody Cocktail MSDS
- HRP-linked Streptavidin MSDS (Kit 7323 only)
- DyLight 680®-linked Streptavidin MSDS; (Kit 7744 only)
- 20X LumigLO & 20X Peroxide (CST47003) MSDS

## III. Hazard Identification:

**Emergency Overview:**  
 Not considered hazardous.  
 Not expected to produce significant adverse health effects when the recommended instructions for use are followed. No known significant effects or critical hazards.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, alcohol foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.  
**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

**Storage:** Store kit in tightly closed container at 4°C.

**VIII - XIII.** Refer to individual MSDS for kit components for Sections 8-13 information: Exposure Controls/Personal Protection, Physical and Chemical Properties, Stability and Reactivity, Toxicological Information, Ecological information, Disposal Considerations.

## XIV. Transport Information:

**DOT: Proper Shipping Name:** None.  
 This substance is considered Non-Hazardous for transport.

**IATA: Proper Shipping Name:** None.  
 This substance is considered Non-Hazardous for air transport.

## XV. Regulatory Information:

**EU Regulations/Classifications:** Xi, Irritant.  
**Risk Phrases:** Irritant. Irritating to eyes and skin. Harmful if swallowed.  
**Safety Phrases:** In case of contact wash with water and seek medical attention.  
**US Regulatory Information:** Irritant.

## XVI. Other Information:

This product is not intended for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.

# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array Glass/Nitrocellulose Slides (with immobilized antibodies)



## I. Identification:

**Product name:** PathScan® Antibody Array Glass/Nitrocellulose Slides (with immobilized antibodies)  
**Product Catalog:** 7744, 7323 Kit component  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** There are no ingredients present that, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## III. Hazard Identification:

**OSHA:** Not considered hazardous.  
**Potential Health Effects:** No known significant effects of critical hazards.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.  
**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Do not breathe vapor. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

## IX. Physical And Chemical Properties

**Appearance:** solid  
**Odor:** data not available  
**pH:** data not available  
**Boiling Point:** data not available  
**Melting Point:** data not available  
**Freezing Point:** data not available  
**Volatile Organic Compounds (VOC):** data not available  
**Autoignition temp.:** data not available  
**Solubility in water:** data not available

Orders ■ 877-616-CELL (2355) orders@cellsignal.com Support ■ 877-678-TECH (8324) info@cellsignal.com Web ■ www.cellsignal.com

# Material Safety Data Sheet (MSDS) for PathScan® Sandwich ELISA Lysis buffer (1X)



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## I. Identification:

**Product name:** PathScan® Sandwich ELISA Lysis buffer (1X)  
**Product Catalog:** 7018  
**CAS#:** Not applicable to mixtures  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous.

Ingredient	Percent (%w/w)	CAS#	Hazardous
Triton X100 (polyethylene glycol octylphenyl ether)	1%	9002-93-1	Yes
Sodium pyrophosphate	0.89%	13472-36-1	No
Sodium chloride	0.88%	7647-14-5	No
Tris-HCl	<0.11%	1185-53-1	No
Sodium fluoride	<0.11%	7681-49-4	No
EGTA	<0.04%	64-42-5	No
EDTA, disodium salt	<0.04%	6381-92-6	No
Beta-glycerophosphate	0.03%	819-83-0	No
Sodium orthovanadate	<0.02%	13721-39-6	No
Leupeptin	<0.01%	103476-89-7	No
Water	>96%	7732-18-5	No

**III. Hazard Identification:** This product is not for use in humans. It is intended for research purposes only. **EMERGENCY OVERVIEW:**  
**Triton X100 (CAS# 9002-93-1)** OSHA hazards: Harmful by ingestion. Irritant.

**Potential Health Effects:**  
**Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.  
**Skin:** May be harmful if absorbed through skin. Causes skin irritation.  
**Eyes:** May cause eye irritation.  
**Ingestion:** Harmful if swallowed.

## IV. First Aid Measures:

**Inhalation:** If inhaled, remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Do not induce vomiting. Get medical attention.  
**Skin exposure:** In case of contact, immediately wash skin with soap and water for at least 15 minutes. Remove contaminated clothing. Wash clothing before reuse.  
**Eye exposure:** In case of contact with eyes, immediately flush eyes with water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** No data available.  
**Autoignition Temperature:** No data available.  
**Explosion:** No data available.  
**Fire extinguishing media:** Water spray, dry chemical, foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Avoid inhalation of vapor or mist. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local and/or general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

## IX. Physical And Chemical Properties

**Appearance:** clear liquid  
**Odor:** data not available  
**pH:** 7.5  
**Melting Point:** data not available  
**Boiling Point:** data not available  
**Flash Point:** data not available  
**Freezing Point:** data not available  
**Volatile Organic Compounds:** data not available  
**Autoignition temp.:** data not available  
**Solubility in water:** soluble in phosphate buffered saline

## X. Stability and Reactivity:

**Stability:** Stable under normal conditions.  
**Conditions/materials to avoid:** strong oxidizing agents, strong acids, strong bases.  
**Hazardous decomposition:** carbon monoxide, carbon dioxide.  
**Hazardous polymerization:** data not available.

## XI. Toxicological Information:

**Acute Toxicity:** data not available  
**Chronic exposure:** data not available

**Potential Health Effects:**  
**Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.  
**Skin:** May be harmful if absorbed through skin. Causes skin irritation.

**Eyes:** Causes eye irritation.  
**Ingestion:** Harmful if swallowed.  
**Exposure Remarks on Hazardous Ingredient Triton X100 (CAS# 99036-19-5)**  
 LD50 mouse intravenous: 1200 mg/kg  
 LD50 rat oral 1800 - 3800 mg/kg

## XII. Ecological Information:

**Ecological Information:** Data not available.

**XIII. Disposal Considerations:** Dispose of in accordance with federal, state and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

## XIV. Transport Information:

**DOT: Proper Shipping Name:** None. This substance is considered Non-Hazardous for air transport.

## XV. Regulatory Information:

**Hazardous Ingredient Triton X100 (CAS# 9002-93-1)**  
 OSHA: Harmful by ingestion, Irritant.  
 DSL: Listed  
 SARA 302, 313 Not Listed  
 SARA 311(12): Acute Health Hazard  
 Massachusetts Right to Know Not Listed, Pennsylvania Right to Know: Listed, New Jersey Right to Know: Listed, California Prop. 65: Not Listed

## XVI. Other Information:

This product is not intended for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.

# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array Blocking Buffer



## I. Identification:

**Product name:** PathScan® Antibody Array Blocking Buffer  
**Product Catalog:** 7744, 7323 Kit Component  
**CAS#:** None  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** There are no ingredients present that, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## III. Hazard Identification:

**OSHA:** Not considered hazardous.  
**Potential Health Effects:** No known significant effects of critical hazards.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

## VI. Accidental Release Measures:

Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

## IX. Physical And Chemical Properties

**Appearance:** colorless liquid  
**Odor:** odor  
**pH:** data not available  
**Boiling Point:** data not available  
**Melting Point:** data not available  
**Freezing Point:** data not available  
**Volatile Organic Compounds (VOC):** data not available  
**Autoignition temp.:** data not available  
**Solubility in water:** soluble in water

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# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array Diluent Buffer



## I. Identification:

**Product name:** PathScan® Antibody Array Diluent Buffer  
**Product Catalog:** 7744, 7323 Kit Component  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous.

Ingredients:	Percent	CAS#
Bovine serum albumin	5%	9048-46-8
Tween20	<1%	9005-64-5
Kathon	<0.5%	55965-84-9
Non-hazardous phosphate buffered saline	>95%	none

## III. Hazard Identification:

**This product is not for use in humans. It is intended for research purposes only.** To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

**OSHA:** No known hazards.  
**EU:** Ingredient: Kathon (0.5%); Xi: Irritant, R36/38-43-52/53

### Routes of Exposure:

**Skin Exposure:** May cause skin irritation. May be harmful if absorbed through skin.  
**Eye Exposure:** May cause eye irritation.  
**Inhalation:** May be harmful if inhaled. Material may be irritating to mucous membrane and upper respiratory tract.  
**Ingestion:** May be harmful if swallowed.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, alcohol foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.  
**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

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## IX. Physical And Chemical Properties

**Appearance:** colorless liquid  
**Odor:** data not available  
**pH:** data not available  
**Boiling Point:** data not available  
**Melting Point:** data not available  
**Freezing Point:** data not available  
**Volatile Organic Compounds (VOC):** data not available  
**Autoignition temp.:** data not available  
**Solubility in water:** data not available

## X. Stability and Reactivity:

**Stability:** Stable under normal conditions.  
**Conditions/materials to avoid:** Data not available.  
**Hazardous Decomposition:** Data not available.  
**Hazardous polymerization:** Will not occur.

## XI. Toxicological Information:

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

### Routes of Exposure:

**Skin Exposure:** May cause skin irritation. May be harmful if absorbed through skin.  
**Eye Exposure:** May cause eye irritation.  
**Inhalation:** May be harmful if inhaled. Material may be irritating to mucous membrane and upper respiratory tract.  
**Ingestion:** May be harmful if swallowed.

Toxicity information on hazardous ingredient **Kathon (0.5%), CAS#55965-84-9**  
 LD50 Mouse Oral: 60 mg/kg LD50 Rat Oral: 53 mg/kg

## XII. Ecological Information:

No data available.

**XIII. Disposal Considerations:** Dispose of in accordance with federal, state and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

## XIV. Transport Information:

**DOT: Proper Shipping Name:** None.  
 This substance is considered Non-Hazardous for transport.

### IATA: Proper Shipping Name:

This substance is considered Non-Hazardous for air transport.

## XV. Regulatory Information:

**EU:** Ingredient Kathon CAS# 55965-84-9 Annex I Listed; Index #: 613-167-00-5  
**0.5% Kathon concentration classification:** Xi: Irritant, R36/38-43-52/53  
**R36/38:** Wear suitable protective clothing, gloves and eye/face protection  
**R43:** May cause sensitization by skin contact.  
**RS3:** May cause long-term adverse effects in the aquatic environment.  
**OSHA:** No known hazards.  
**Canadian DSL:** Not Listed.  
**SARA 302, 313:** Not Listed.  
**SARA 311/312:** Not Listed.  
**Massachusetts Right To Know:** Not Listed. **Pennsylvania Right To Know:** Not Listed.  
**New Jersey Right To Know:** Not Listed. **California Prop. 65:** Not Listed.

## XVI. Other Information:

This product is not intended for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.



# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array Detection Antibody Cocktail

## I. Identification:

**Product name:** PathScan® Antibody Array Detection Antibody Cocktail  
**Product Catalog:** 7744, 7323 Kit Component  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous.

Ingredients:	Percent	CAS#
Bovine Serum Albumin	5%	9048-46-8
Tween20	<1%	9005-64-5
Kathon	<0.5%	55965-84-9
Immunoglobulin	<0.1%	none
Non-hazardous phosphate buffered saline	>95%	none

## III. Hazard Identification:

**This product is not for use in humans. It is intended for research purposes only.** To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

**OSHA:** No known hazards.  
**EU:** Ingredient: Kathon (0.5%); Xi: Irritant, R36/38-43-52/53

### Routes of Exposure:

**Skin Exposure:** May cause skin irritation. May be harmful if absorbed through skin.  
**Eye Exposure:** May cause eye irritation.  
**Inhalation:** May be harmful if inhaled. Material may be irritating to mucous membrane and upper respiratory tract.  
**Ingestion:** May be harmful if swallowed.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.  
**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

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# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array Wash Buffer



## I. Identification:

**Product name:** PathScan® Antibody Array Wash Buffer  
**Product Catalog:** 7744, 7323 Kit Component  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than <0.1% are considered non-hazardous.

Ingredients:	Percent	CAS#
Tween20	2%	9005-64-5
Non-hazardous 20X phosphate buffered saline	98%	none

## III. Hazard Identification:

No known hazards.  
**This product is not for use in humans. It is intended for research purposes only.** To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, alcohol foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.  
**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

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# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array HRP-linked Streptavidin



## I. Identification:

**Product name:** PathScan® Antibody Array HRP-linked Streptavidin  
**Product Catalog:** 7323 Kit component  
**CAS#:** None  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** There are no ingredients present that, within the current knowledge of the supplier and the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

## III. Hazard Identification:

**OSHA:** Not considered hazardous.  
**Potential Health Effects:** No known significant effects of critical hazards.

**Routes of Exposure:**  
**Skin Exposure:** No known significant effects of critical hazards.  
**Eye Exposure:** No known significant effects of critical hazards.  
**Inhalation:** No known significant effects of critical hazards.  
**Ingestion:** No known significant effects of critical hazards.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.  
**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.  
**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.  
**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.  
**Autoignition Temperature:** Not applicable.  
**Explosion:** Not applicable.  
**Fire extinguishing media:** Water spray, dry chemical, foam, or carbon dioxide.  
**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.  
**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.  
**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.  
**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

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# Material Safety Data Sheet (MSDS) for PathScan® Antibody Array Dylight 680®-linked Streptavidin



## I. Identification:

**Product name:** PathScan® Antibody Array Dylight 680®-linked Streptavidin  
**Product Catalog:** 7744 Kit Component  
**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 978-867-2300 TEL  
 1-978-867-2400 FAX  
 978-578-6737 EMERGENCY TEL

## II. Composition/Information:

**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than < 0.1% are considered non-hazardous.

Ingredients:	Percent	CAS#
Bovine serum albumin	5%	9048-46-6
Tween20	<1%	9005-64-5
Kathon	<0.5%	55965-84-9
Non-hazardous phosphate buffered saline	>95%	none

## III. Hazard Identification:

**This product is not for use in humans. It is intended for research purposes only.** To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

**OSHA:** No known hazards.  
**EU:** Ingredient Kathon (0.5%): Xi: Irritant. R36/38-43-52/53

**Routes of Exposure:** **Skin Exposure:** May cause skin irritation. May be harmful if absorbed through skin.

**Eye Exposure:** May Cause eye irritation.

**Inhalation:** May be harmful if inhaled. Material may be irritating to mucous membrane and upper respiratory tract.  
**Ingestion:** May be harmful if swallowed.

**IV. First Aid Measures:**

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.

**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.

**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.

**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion:** Not applicable.

**Fire extinguishing media:** Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Firefighting:** Wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes.

**Specific Hazard:** None.

**VI. Accidental Release Measures:** Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container. Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** A system of local (fume hood) and general exhaust is recommended.

**Skin Protection:** Wear compatible chemical resistant gloves and protective clothing.

**Eye protection:** Wear chemical safety goggles. Maintain emergency eyewash and shower in work area.

## IX. Physical And Chemical Properties

**Appearance:** colorless liquid  
**Odor:** data not available  
**pH:** data not available  
**Boiling Point:** data not available  
**Melting Point:** data not available  
**Freezing Point:** data not available  
**Volatile Organic Compounds (VOC):** data not available  
**Autoignition temp.:** data not available  
**Solubility in water:** data not available

## X. Stability and Reactivity:

**Stability:** Stable under normal conditions.

**Conditions/materials to avoid:** Data not available.

**Hazardous Decomposition:** Data not available.

**Hazardous polymerization:** Will not occur.

## XI. Toxicological Information:

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

### Routes of Exposure:

**Skin Exposure:** May cause skin irritation. May be harmful if absorbed through skin.

**Eye Exposure:** May cause eye irritation.

**Inhalation:** May be harmful if inhaled. Material may be irritating to mucous membrane and upper respiratory tract.

**Ingestion:** May be harmful if swallowed.

Toxicity Information on hazardous Ingredient: **Kathon (0.5%), CAS#55965-84-9**

LD50 Mouse Oral: 60 mg/kg LD50 Rat Oral: 53 mg/kg

**XII. Ecological Information:** No data available.

**XIII. Disposal Considerations:** Dispose of in accordance with federal, state and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

## XIV. Transport Information:

**DOT: Proper Shipping Name:** None.

This substance is considered Non-Hazardous for transport.

**IATA: Proper Shipping Name:** None.

This substance is considered Non-Hazardous for air transport.

## XV. Regulatory Information:

**EU:** Ingredient Kathon CAS# 55965-84-9 Annex I Listed; Index #: 613-167-00-5

**0.5% Kathon concentration classification:** Xi: Irritant. R36/38-43-52/53

**R36/38:** Wear suitable protective clothing, gloves and eye/face protection

**R43:** May cause sensitization by skin contact.

**R53:** May cause long-term adverse effects in the aquatic environment.

**OSHA:** No known hazards.

**Canadian DSL:** Not Listed.

**SARA 302, 313:** Not Listed.

**SARA 311/312:** Not Listed.

**Massachusetts Right To Know:** Not Listed. **Pennsylvania Right To Know:** Not Listed.

**New Jersey Right To Know:** Not Listed. **California Prop. 65:** Not Listed.

## XVI. Other Information:

This product is not intended for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.

# Material Safety Data Sheet (MSDS) for 20X LumiGLO® and 20X Peroxide



## I. Identification:

**Product name:** 20X LumiGLO® and 20X Peroxide

**Product Catalog:** 7003

**CAS number:** None

**Manufacturer Supplier:** Cell Signaling Technology  
 3 Trask Lane  
 Danvers, MA 01923 USA  
 1-978-867-2300 TEL  
 1-978-867-2400 FAX  
 1-978-578-6737 Emergency TEL

## II. Composition/Information on Ingredients:

Hazardous Reagent:	Percent	CAS#
Dimethyl sulfoxide	≥20%	67-68-5

**This product is For Research Use Only.** According to 29 CFR 1910.1200(d), mixtures with hazardous ingredients at less than <1% and carcinogens at less than < 0.1% are considered non-hazardous.

## III. Hazard Identification:

**CAUTION:** This product is not for use in humans. It is intended for research purposes only. To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been established.

**Emergency Overview:** Irritant. Irritating to eyes, respiratory system, skin.

**Potential Health Effects:**

**Inhalation:** May be harmful if inhaled. May cause respiratory tract irritation.

**Eye Contact:** May cause eye irritation.

**Skin Contact:** May be harmful if absorbed through skin. Prolonged or repeated contact may cause skin irritation.

**Ingestion:** May be harmful if swallowed.

## IV. First Aid Measures:

**Inhalation:** Remove to fresh air. If breathing is difficult, get medical attention.

**Ingestion:** If person is conscious, wash out mouth with water. Get medical attention.

**Skin exposure:** Wash skin with soap and water. If irritation develops or persists, get medical attention.

**Eye exposure:** Immediately flush eyes water for at least 15 minutes. Get medical attention.

## V. Fire Fighting Measures:

**Flash Point:** N/A

**Autoignition Temperature:** N/A

**Explosion:** N/A

**Fire extinguishing media:** water spray, dry chemical, alcohol foam, or carbon dioxide.

**Firefighting:** wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes. May emit toxic fumes under fire conditions.

## VI. Accidental Release Measures:

Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash spill site after material has been picked up for disposal.

## VII. Handling And Storage:

Store at 4°C in tightly closed container.

Avoid inhalation of vapor or mist. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

## VIII. Exposure Controls/Personal:

**Ventilation System:** a system of local and/or general exhaust is recommended.

**Skin Protection:** wear compatible chemical resistant gloves and protective clothing.

**Eye protection:** wear protective safety glasses or chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

## IX. Physical And Chemical Properties:

**Appearance:** clear faint yellow colored liquid  
**Odor:** data not available  
**pH:** data not available  
**Boiling Point:** >100 °C/212 °F (water)  
**Melting or Freezing Point:** <0 °C/32 °F (water)  
**Flash Point:** data not available  
**Volatile Organic Compounds (VOC):** data not available  
**Autoignition temp.:** data not available  
**Solubility (water):** miscible in water

## X. Stability and Reactivity:

**Stability:** Stable under normal conditions.

**Conditions to avoid:** strong oxidizing agents, strong acids, strong bases.

**Hazardous Decomposition:** carbon monoxide, carbon dioxide.

**Hazardous polymerization:** will not occur.

## XI. Toxicological Information:

Acute toxicity: data not available. Chronic exposure: data not available

### Potential Health Effects:

**Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.

**Skin:** May be harmful if absorbed through skin. Causes skin irritation.

**Eyes:** Causes eye irritation.

**Ingestion:** Harmful if swallowed.

Toxicity Data on Hazardous ingredient Dimethyl Sulfoxide, CAS#67-68-5

RTCS: P48210000

LD50 Oral rat 14,500 mg/kg

LC50 Inhalation rat 4 h 40250 ppm

LD50 Dermal rabbit > 5,000 mg/kg

**XII. Ecological Information:** No data available.

**XIII. Disposal Considerations:** Dispose of in accordance with federal, state and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

## XIV. Transport Information:

**D.O.T. Proper Shipping Name:** None. This substance is considered non-hazardous for transport.

**IATA Proper Shipping Name:** None. This substance is considered non-hazardous for air transport.

## XV. Regulatory Information:

**EU:** Not classified

**OSHA:** Ingredient Dimethyl Sulfoxide, CAS#67-68-5: Combustible Liquid, Target Organ Effect

Canadian DSL: Listed; Ingredient Dimethyl Sulfoxide, CAS#67-68-5

SARA 302, 313: Ingredients Not Listed.

SARA 311/312: Ingredient Dimethyl Sulfoxide, CAS#67-68-5: Fire Hazard, Chronic Health Hazard.

Massachusetts Right To Know: Ingredients Not Listed.

Pennsylvania Right To Know: Ingredient Dimethyl Sulfoxide, CAS#67-68-5

New Jersey Right To Know: Ingredient Dimethyl Sulfoxide, CAS#67-68-5

California Prop. 65: Ingredients Not Listed.

## XVI. Other Information:

This product is for research use only and is not intended for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as a guide for safe use of this product in a laboratory setting by experienced personnel. The burden of safe use of this material rests entirely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signaling Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.