PathScan® RTK Signaling Antibody Array Kit (Chemiluminescent Readout)

1 Kit (16 multiplexed assays)



Orders 877-616-CELL (2355)

orders@cellsignal.com

Support ■ 877-678-TECH (8324)

info@cellsignal.com

Web www.cellsignal.com

rev. 06/23/15

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

Species Cross-Reactivity: H

Description: The PathScan® RTK Signaling Antibody 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 28 receptor tyrosine kinases and 11 important signaling nodes, when phosphorylated at tyrosine or other residues. Targetspecific capture antibodies have been spotted in duplicate onto nitrocellulose-coated glass slides. Each kit contains two 8-pad slides, allowing the user to test up to 16 samples. 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: Cell Signaling Technology's PathScan® RTK Signaling Antibody Array Kit detects the indicated RTKs and signaling nodes only when phosphorylated at tyrosine or specified residues (see Array Target Map). No significant crossreactivity has been observed between targets, with the exception of some crossreactivity of the FLT3 antibody with phosphorylated EphB3. In addition, Stat1 (Tyr701) and Stat3 (Tyr705) may be detected when phosphorylated at other tyrosine sites within the proteins. This kit is optimized for cell lysates diluted to a total protein concentration between 0.2 and 1 mg/ml (see Figure 4). All capture antibodies have been validated for human targets. Although this kit has not been tested with mouse lysates, it is expected that many capture antibodies will crossreact in murine systems.

Background: Receptor Tyrosine Kinases (RTKs) are a family of cell surface receptors that signal primarily through tyrosine phosphorylation events (1).

RTKs trigger a wide range of downstream signaling cascades, including the PI3K/Akt, MAPK and Jak/Stat pathways. These pathways control basic cellular functions such as division, growth, metabolism, differentiation, migration and survival. Dysregulation of RTK signaling has been implicated in a large number of cancers (2), making RTKs popular targets for pharmaceutical intervention.

Background References:

- (1) Schlessinger, J. (2000) Cell 103, 211-25.
- (2) Blume-Jensen, P. and Hunter, T. (2001) *Nature* 411, 355-65.

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 µІ	White
10X HRP-linked Streptavidin	300 µІ	Clear
20X LumiGLO® Reagent A #7003	5 ml	Brown
20X Peroxide Reagent B #7003	5 ml	Clear
*Cell Lysis Buffer #9803	15 ml	Clear

*Kit should be stored at 4°C with the exception of 10X Cell Lysis Buffer, which is stored at -20°C (packaged separately)

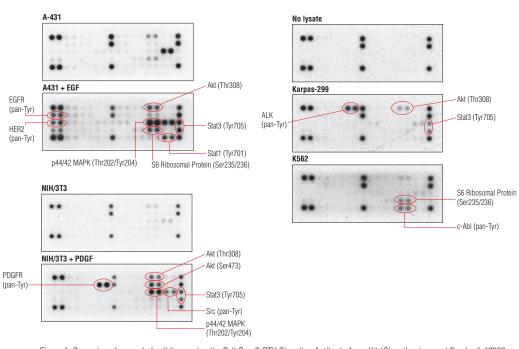


Figure 1. Screening of a panel of cell lines using the PathScarl® RTK Signaling Antibody Array Kit (Chemiluminescent Readout) #7982 reveals various phosphorylated RTKs and signaling nodes. A431 cells were starved for 24 hours, then treated with 100 ng/ml EGF #8916 for 3 minutes at 37°C. NIH/3T3 cells were starved for 24 hours, then treated with 100 ng/ml PDGF #9909 for 5 minutes at 37°C. Karpas-299 and K562 cells were lysed without starvation or treatment. The array images were captured using chemiluminescent film, with 2-5 second exposure times.

U.S. Patent No. 5,675,063

page 1 of 6



Orders 877-616-CELL (2355)

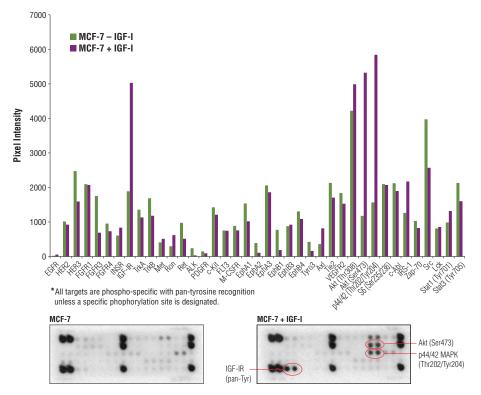
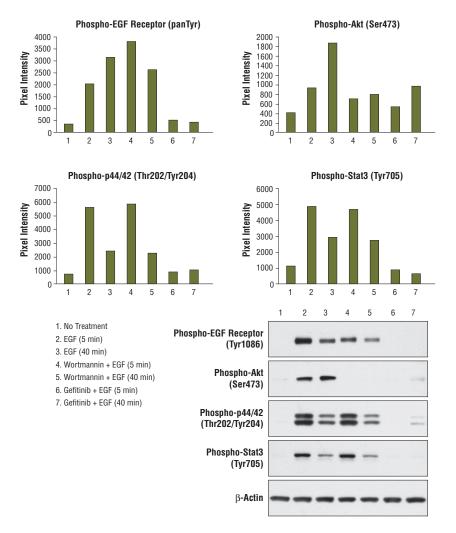


Figure 2. Treatment of MCF-7 cells with IGF-I stimulates phosphorylation of IGF-IR at tyrosine residues, Akt at Ser473 and p44/42 MAPK at Thr202/Tyr204 as detected by the PathScan® RTK Signaling Antibody Array Kit (Chemiluminescent Readout) #7982. MCF-7 cells were starved for 24 hours, then treated with 100 ng/ml IGF-I #3093 for 5 minutes at 37°C. The chemiluminescent film image (lower panel) and the quantification of that image (upper panel) are shown. The chemiluminescent array images were captured following 2-5 second film exposures.



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Support 877-678-TECH (8324)

MCF-7 + IGF-I

▲ phospho-IGF-IR (panTyr) MCF-7 - IGF-I △ phospho-IGF-IR (panTyr) phospho-p44/42 (Thr202/Tyr204)phospho-Akt (Ser473) phospho-p44/42 (Thr202/Tyr204) phospho-Akt (Ser473) 35000 30000 Intensity 25000 20000 Pixel 15000 10000 5000 0.5 0.8 0.2 0.3 0.4 0.6 0.7 0.0 0.1 Protein conc. of lysate (mg/ml)

Figure 4. The relationship between lysate protein concentration from untreated and IGF-I treated MCF-7 cells and the pixel intensities of phospho-IGF-IR (pan-Tyr), phospho-Akt (Ser473) and phospho-p44/42 (Thr202/Tyr204) is shown. MCF-7 cells were starved for 24 hours, then treated with 100 ng/ml IGF-I #3093 for 5 minutes at 37°C.

■ Figure 3. Treatment of A431 cells with EGF stimulates phosphorylation of EGFR, Akt, p44/42 MAPK and Stat3 as detected by the
PathScar® RTK Signaling Antibody Array Kit (Chemiluminescent
Readout) #7982. A431 cells were starved for 24 hours and treated
with 100 ng/M EGF #8916 for 5 or 40 minutes. In some cases, cells
were treated with either 1 µM wortmannin #9951 for 1 hour before or
1 µM gefitinib for 2 hours before EGF stimulation. Array image pixel
intensities obtained from a digital imager are shown in the top figure,
while western blots are shown in the bottom figure.





Figure 5. Target map of the PathScan® RTK Signaling Antibody Array Kit (Chemiluminscent Readout)

Receptor Tyrosine Kinases

Receptor Tyrosine Kinases			
	Target	Phosphorylation Site	Family
1	EGFR/ErbB1	pan-Tyr	EGFR
2	HER2/ErbB2	pan-Tyr	EGFR
3	HER3/ErbB3	pan-Tyr	EGFR
4	FGFR1	pan-Tyr	FGFR
5	FGFR3	pan-Tyr	FGFR
6	FGFR4	pan-Tyr	FGFR
7	InsR	pan-Tyr	Insulin R
8	IGF-IR	pan-Tyr	Insulin R
9	TrkA/NTRK1	pan-Tyr	NGFR
10	TrkB/NTRK2	pan-Tyr	NGFR
11	Met/HGFR	pan-Tyr	HGFR
12	Ron/MST1R	pan-Tyr	HGFR
13	Ret	pan-Tyr	Ret
14	ALK	pan-Tyr	LTK
15	PDGFR	pan-Tyr	PDGFR
16	c-Kit/SCFR	pan-Tyr	PDGFR
17	FLT3/Flk2	pan-Tyr	PDGFR
18	M-CSFR/CSF-1R	pan-Tyr	PDGFR
19	EphA1	pan-Tyr	EphR
20	EphA2	pan-Tyr	EphR
21	EphA3	pan-Tyr	EphR
22	EphB1	pan-Tyr	EphR
23	EphB3	pan-Tyr	EphR
24	EphB4	pan-Tyr	EphR
25	Tyro3/Dtk	pan-Tyr	AxI
26	AxI	pan-Tyr	AxI
27	Tie2/TEK	pan-Tyr	Tie
28	VEGFR2/KDR	pan-Tyr	VEGFR

Signaling Nodes

	Target	Phosphorylation Site	Family
29	Akt/PKB/Rac	Thr308	Akt
30	Akt/PKB/Rac	Ser473	Akt
31	p44/42 MAPK (ERK1/2)	Thr202/Tyr204	MAPK
32	S6 Ribosomal Protein	Ser235/236	RSK
33	c-AbI	pan-Tyr	Abl
34	IRS-1	pan-Tyr	IRS
35	Zap-70	pan-Tyr	Zap-70
36	Src	pan-Tyr	Src
37	Lck	pan-Tyr	Src
38	Stat1	Tyr701	Stat
39	Stat3	Tyr705	Stat

PathScan® Antibody Array Kit (Chemiluminescent Readout) Protocol

A Preparing Cell Lysates

- Thaw 10X Cell Lysis Buffer #9803 and mix thoroughly. Prepare 1X Cell Lysis Buffer by diluting 10X Cell Lysis Buffer in deionized water. Supplement 1X Cell Lysis Buffer with phenylmethylsulfonyl fluoride (PMSF) to a final concentration of 1 mM. Keep on ice.
- 2. Remove media and wash cells once with ice-cold 1X PBS.
- Remove PBS and add ice-cold 1X Cell Lysis Buffer. For adherent cells, use 0.5 ml 1X Cell Lysis Buffer for each plate (10 cm in diameter). Incubate on ice for 5 minutes
- If using adherent cells, dislodge the cells using a cell scraper. Transfer lysed cells to an appropriate tube. Keep on ice.
- 5. Microcentrifuge at maximum speed for 10 minutes at 4°C and transfer the supernatant to a new tube. The supernatant is the cell lysate. 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.

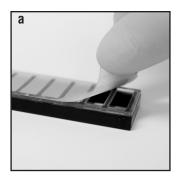
B Assay Procedure

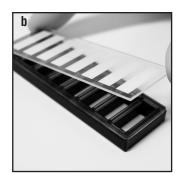
- 1. Bring glass slides and blocking buffer to room temperature before use.
- Prepare 1X Array Wash Buffer by diluting 20X Array Wash Buffer in deionized water. Keep at room temperature. Dilute 1 mL of 20X Array Wash Buffer with 19 mL of deionized water. Label as 1X Array Wash Buffer.
- Prepare 1X Detection 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 $300 \, \mu L$ 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 $\bf 1$ slide: Dilute 150 μL of 10X HRP-linked Streptavidin with 1350 μL of Array Diluent Buffer.
 - For running **2 slides**: Dilute $300 \, \mu L$ of 10X HRP linked Streptavidin with $2700 \, \mu L$ 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 nitrocellulose 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 numbered 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.
 - d. Slide the clip into place. The number "1" on the metal clip will now be in the same corner of the assembly as the orientation line.
 - e. Snap the unmarked 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 150 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 150 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 200 μI (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.

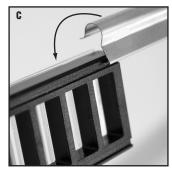
- 10. Wash 4 X 5 minutes with 200 µl (1X) Array Wash Buffer as in step 8.
- Add 150 µl (1X) HRP-linked Streptavidin to each well and cover with sealing tape. Incubate for 30 minutes at room temperature on an orbital shaker.
- 12. Wash 4 X 5 minutes with 200 µl (1X) Array Wash Buffer as in step 8.
- 13. 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).
- 16. Decant Array Wash Buffer and cover slide with LumiGLO®/Peroxide reagent.
- 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.

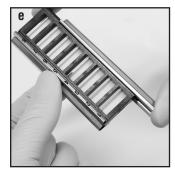
LumiGLO® is a registered trademark of Kirkegaard & Perry Laboratories.













I. Identification:

Product name: PathScan* RTK Signaling Antibody Array Kit
Product Catalog: 7949, 7882 Kits
Manufacturer Supplier: Cell Signaling Technology
3 Task Lare
Damers: MA 01923 USA
978-887-2000 TEL
978-887-2000 TEL
978-877-200 FAX
978-578-6737 EMERGENCY TEL

II. Composition/Information: Substance Name: PathScan® RTK Signaling Antibod

Substance Name: MainScari Prince Segment 9: 0 and 29 CFR 1910.1200(d), mixtures This product is For Research Use Only. According to 29 CFR 1910.1200(d), mixtures the harmonic innervients at less than <1% and carcinogens at less than <1% and carcinogens at the harmonic innervients at less than <1% and carcinogens at the harmonic innervients at less than <1% and carcinogens at the harmonic innervients at less than <1% and carcinogens at the harmonic innervients at less than <1% and carcinogens at less than <1% and carcinogen with hazardous ingredients at less than 41% and carringings at the sets than 41% are considered non-hazardous. Please refer to the individual material safety data sheets for hazard information specific to kit components.

• Array Sides MSDS

• Array Blocking Buttler MSDS

• Array Distant Buttler MSDS

• Array Wash Buttler MSDS

• Array Distant Buttler MSDS

- PARTAY WASH SURFEY MINDLS
 Detection Antibody Cockhail MSDS
 HRP-linked Streptavidin MSDS (Kit 7982 only)
 DyLight 680®-linked Steptavidin MSDS (Kit 7949 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 recomm 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. Cet medical attention.
Skin exposure: Wash skin with soap and water. If irritation develops or persists, get medical

Eve exposure: Immediately flush eves water for at least 15 minutes. Get medical attention.

V. Fire Fighting Measures:

Flash Point: Not applicable.
Autoignition Temperature: Not applicable.

Abrogations I American Replacement of the Explosion in Not applicable. Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon Firefighting: Ware protective clothing and self-contained breathing apparatus to contact with skin and eyes.

Specific Hazard: None

VI. Accidental Release Measures: Wear appropriate persona 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:

VIII - XIII. Relet 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. Irritart.
Risk Phrases: Irritart. Irritaring to eyes and skin. Harmful if swallowed.
Safety Phrases: Irose of confact 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 a coursule. It is intended to serve as a quide for sele 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 to believed to be accurate but is not necessity! all-inclusive and shall be used only as a guide. Cell Signating Technology, Inc., shall not be held liable for any damage resulting from the handling of or from condrive with the above portaining.

I. Identification:

Product name: PathScan® RTK Signaling Antibody Array Kit Product Catalog: 7949, 7982 Kits

Catalog: 7949, 7982 Kits cturer 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® RTK Signaling Antibod

CASE: None
This product is For Research Use Only, According to 29 CFR 1910 1200(d), mixtures with hazerdous ingredients at less than <1% and carrinogens at less than <0.1% are considered non-hazerdous. Please refer to the individual material safely data sheets for hazer information specific to kit composition. A consideration of the COST of

- Array Wash Buffer MSDS
 Detection Antibody Cocktail MSDS
 Detection Antibody Cocktail MSDS
 HRP-linked Streptavidin MSDS (Kit 7982 only)
 DyLight 869: "Iniked Steptavidin MSDS (Kit 7949 only)
 20X LumiGLO & 20X Peroxide (CST#7003) MSDS

III. Hazard Identification:

Emergency Overview:
Not considered hazardous.
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

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

V. Fire Fighting Measures:

Flash Point: Not applicable.
Audioghtion Femperature: Not applicable.
Explosion: Not applicable.
Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide
Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide
Fireflighting: Wear protective clothing and self-contained breathing apparatus to prevent

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

VII. Handling And Storage:

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

XIV. Transport Information:

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.

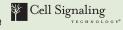
XV. Regulatory Information:
EU Regulations/Classifications: Xi. Initant.
Risk Phrases: Initant. Initialing to eyes and skin. Harmful if swallowed.
Safely Phrases: in case of contact wesh with water and seek medical attention.
US Regulatory Information: Irritant.

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 sale use of this product in a bistoratory setting by experienced personnel. The bruden of sale use of this metated reservinely with the user. The above information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a quide. Cell Signating Technology, Inc., shall not led liable for any damage resulting from the handling of or from contact with the above product. Ins. To the best of our knowledge, this document is

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® Antibody Array Glass/Nitrocellulose Slides (with immobilized antibodies)



I. Identification:

Product name: PathScan® Antibody Array Glass/Nitrocellulose Slides

(with immobilized antibodies)

Product Catalog: 7949, 7982 Kit component

Manufacturer Supplier: Cell Signaling Technology
3 Trask Lane 3 Irask 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 ill breshing is difficult, get medical attention.

Ingestion: It peans is conscious, was dut mouth with water. Get medical attention.

Skin exposure: Wash skin with scap and water. Ill 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.

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

VI. Accidental Release Measures: Wear appropriate personal protective equipment as indicated in Section VIII. Absorb liquid with an absorbent material. 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 gener

n 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 sho

IX. Physical And Chemical Properties

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

X. Stability and Reactivity:

s/materials to avoid: Data not available.

Hazardous Decomposition: Data not available. Hazardous polymerization: Should not occur under normal condition of storage and use.

XI. Toxicological Information: ical, physical, and toxicological properties have not

been thoroughly investigated.

Routes of Exposure:
Skin Exposure: Data not available.
Eye Exposure: Data not available.
Inhalation: Data not available.
Ingestion: Data not available.

XII. Ecological Information: Data not available.

XIII. Disposal Considerations: Dispose of in accordance with federal state and local environmental regulations. This product is not considered bazardous waste.

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:

SARA 311/312: Not Lis

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 account. 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 intended sets entirely with the user. The above information is believed to be account but is not necessaryly effectives and safe the user of the product of the product

Material Safety Data Sheet (MSDS) for Cell Lysis Buffer (10X)

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



I. Identification:

Product name: Cell Lysis Buffer (10X)
Product Catalog: 9803
CAS number Not applicable to mixtures
Manufacturer Supplier: Cell Signaling Technology
S Track Line
Damers, MA 01923 USA
1-978-967-200 TEL
1-978-967-200 TEX
1-978-967-378 Emergency Prone

II. Composition/Information on Ingredients:

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 considerable.

ered non-hazardous. Hazardous Reagent: 20X LumiGLO

Percent CAS# Triton X-100 (polyethylene glycol octylphenol ether) 1% 9002-93-1

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 :

Emergeny ingestion. Irritant.
Potential Health Effects:
Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
Eye Contact: Causes eye irritation. Risk of damage to eyes.
Skin Contact: May be harmful if absorbed through skin. Causes skin irritation.

IV. First Aid Measures for hazardous ingredient: n X-100 (polyethylene glycol octylphenol ether):

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

Ingestion: DO NOT INDUCE VOMITING. If person is conscious, wash out mouth with

water. Get medical attention.

Skin contact: Wash skin with soap or mild detergent and water for at least 15 minutes. If irritation develops or persists, get medical attention.

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

V. Fire Fighting Measures:

This A spatial is a spatial process of the sp

VI. Accidental Release Measures:

Wear appropriate personal protective equipment as indicated in Section 8. 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 (tune hood) and general exhaust is recommes
Skin Protection: wear compatible chemical resistant gloves and protective clothing.
Eye protection: wear chemical safety goggles. Maintain emergency eyewash and sho

IX. Physical and Chemical Properties

pH:
Boiling Point:
Melting or Freezing Point:
Flash Point:
Volatile Organic Compounds (VOC):

X. Stability and Reactivity:

Hazardous polymerization: will not occur

XI. Toxicological Information:

Acute toxicity: data not available Acute toxicity: data nd 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.

XII. Ecological Information:

XIII. Disposal Considerations: ironmental regulations. Contact a

Dispose of in accordance with federal, state and local environmental re 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

SORAH (pagedish Trition X100, CAS/#9002-93-1. Harmful by ingestion, imitant
Canadian DSL: Listed Ingredient Trition X100, CAS/#9002-93-1.

SARA 302, 231 Singerients Not Listed.

Pennsylvania Rijuft To Krow: Ingredient Trition X100, CAS/#9002-93-1

California Prop. 65: Ingredients Not Listed.

California Prop. 65: Ingredients Not Listed.

XVI. Other Information:

A V I. O'UNET 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 pro-in a laboratory setting by experienced personnel. The burden of safe use of this material rests in a locularity scaling by experience up establisher. The duries of this describes the state and established entirely with the uses. The above information is believed to be accurate but is not necessarily all-in-clusive 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.

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

data not available

data not available data not available

data not available

and toxicological properties have not

IX. Physical And Chemical Properties

Appearance: Odor:

Boiling Point:

Solubility in water:

Volatile Organic Compounds (VOC):

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:

r respiratory tract. stion: May be harmful if swallowed.

XIV. Transport Information: DOT: Proper Shipping Name: None.

This substance is considered Non-Hazardous for transport.

XVI. Other Information:

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

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

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

XV. Regulatory Information:
Bit: Ingradient Kathor CAS 55955-84-9 Annex It Listed: Index # 613-167-00-5
0-5% Kathoro concentration classification: Xi Infant RSG93-45-253
RSG98: Werr suitable protective clothing, gloves and eye/face protection
RSG 189; cause sensitization by skin contact.
RSG 189; cause legit plant adverse detects in the aquatic environment.

RS3: May cause long-tern adverse effects in the aquatic environment.

OSHA: No known bazards.

Canadian DSL: Not Listed.

SARA 3102, 318: Not Listed.

SARA 3101742: Not Listed.

SARA 3117412: Not Listed.

New Jersey 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 set use of this metal rest settinely with the user badwe information is believed to be accurate but is not necessarily all-inclusive and shall be used only as a guide. Cell Signating Technology, Inc., shall not be held fabile for any damage resulting from the heatfling of or from contact with the above product.

Eye Exposure: May cause eye irritation. Inhalation: May be harmful if inhaled. Material may be irritating to mucous membrane and

XIII. Disposal Considerations: Dispose of in accordance with federal,

I. Identification:

Product name: PathScan® Antibody Array Blocking Buffer Product Catalog: 7949, 7982 Kit Component CAS#: None Manufacturer Supplier: Cell Signaling Technology 3 Track Lane Damers, MA 01923 USA

Danvers, MA 0192 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 howeledge 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.
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:

1V. FITST AIG INCASURES:
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

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: No Ingilizable.

Explosion: No lapplicable.

Fire extinguishing media: Water spray, dry chemical, foam, or carbon different present succession of the productive clothing and self-contained breathing apparationated with skin and eyes.

Specific Hazard: None.

VI. Accidental Release Measures: Wear appropriate persection with an absorbent m Protective equipment as indicated in Section VIII. Absorb liquid an absorbert 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, thoroughly after handling. Avoid prolonged or repeated exposure

VIII. Exposure Controls/Personal:

Ventilation System: A system of local (tume 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 word area.

IX. Physical And Chemical Properties

pH: Boiling Point: data not available Volatile Organic Compounds (VOC): data not available data not available Solubility in water: soluble in water

X. Stability and Reactivity:

Stability: Stable."
Conditions/materials to avoid: Data not available.
Hazardous Decomposition: Data not available.
Hazardous polymerization: should not occur under normal condition of storage and use.

XI. Toxicological Information:

thoroughly investigated.

Potential Health Effects: No known significant effects of critical hazards.

Routes of Exposure:

Skin Exposure: No known significant effects of critical hazards.

Skin Exposure: No known significant eirects or 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.

XII. Ecological Information: No data available.

XIII. Disposal Considerations: Dispose of in accordance with federal,

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:

OSHA: Not lister

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

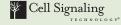
XVI. Other Information:

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

PathScan® Antibody Array Wash Buffer

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Material Safety Data Sheet (MSDS) for



I. Identification:

Product name: PathScan® Antibody Array Wash Buffer Product Catalog: 7949, 7982 Kit Component Manufacturer Supplier: Cell Signaling Technology 3 Trask Lane Darwers, 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(g), mixtures with hazardous ingredients at less than < 1% and carcinogens at less than < 0.1% are considered non-leazardous.

Ingredients: 9005-64-5 Non-hazardous 20X phosphate buffered saline

III. Hazard Identification:

No known nazaros.

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

IV. First Aid Measures:

1V. FITST AID INCASURES:
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

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

V. Fire Fighting Measures:

Flash Point: Not applicable.
Audioghtion Femperature: Not applicable.
Explosion: Not applicable.
Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide
Fire extinguishing media: Water spray, dry chemical, alcohol foam, or carbon dioxide
Fireflighting: Wear protective clothing and self-contained breathing apparatus to prevent

VI. Accidental Release Measures: Wear appropriate personal protective equipment as indicated in Section VIII. Assorb 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:

VIII. EXPOSURE CONTROLS/PERSONAL:
Ventilation System: A system of local (time hood) and general exhaust is recommer
Skin Protection: Wear compatible chemical resistant gloves and protective clothing.
Eye protection: Wear chemical safety goggles. Maintain emergency eyewash and sho

IX. Physical And Chemical Properties

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

X. Stability and Reactivity:

Stability: Stable.

Conditions/materials to avoid: Data not available
Hazardous Decomposition: Data not available.

Hazardous polymerization: Will not occur.

XI. Toxicological Information:

Routes of Exposure:
Skin Exposure: May case 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.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. XII. Ecological Information: No data available.

XIII. Disposal Considerations: Dispose of in accordance with federal,

XIV. Transport Information:

IATA: Proper Shipping Name: None.

This substance is considered Non-Hazardous for air transport.

XV. Regulatory Information:

OSHA: No known hazards

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:

XVI. Other Information:

This product is on intended for use in humans. To the best of our knowledge, this document is accurable. It is intended to serve as a guide for safe use of this product in a bloodary setting by experienced personnel. The burden of safe use of this material set 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 Signating Technology, Inc., shall not be held liable for any damage resulting from the handling of or from contact with the above product.

I. Identification:

Product name: PathScar® Antibody Array Diluent Buffer Product Catalog; 7949, 7982 Kit Component Manufacturer Supplier. Cell Signaling Technology 3 Trask Lane Danyers, M4 01923 USA 978-867-2200 TEA

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.

Percent	CAS#
5%	9048-46-8
<1%	9005-64-5
< 0.5%	55965-84-9
>95%	none
	5% <1% <0.5%

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.

District. Vict. Accounts and Conference of C upper respiratory tract.
Ingestion: May be harmful if swallowed.

IV. First Aid Measures:

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

V. Fire Fighting Measures:

V. Fire Fighting Measures:

Flash Point Not applicable.

Autolgation Temperature: Not applicable.

Explosion: Not applicable.

Fire extinguishing media: Water spray, dry chemical, alcohol form, or carbon did.

Fire extinguishing media: Water spray, dry chemical, alcohol form, or carbon did.

Fireflaghting: West protective clothing and self-contained breathing apparatus to pre contact with skin and eyes.

Specific Nazard: None.

VI. Accidental Release Measures: Wear appropriate pers 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.

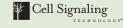
VIII. Exposure Controls/Personal:

Ventilation System: A system of local (time house) 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 word area.

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



I. Identification:

Product name: PathScan® Antibody Array Detection Antibody Cocktail Product Catalog: 7949, 7982 Kit Component Manufacturer Supplier: Cell Signaling Technology 3 Trask Lane

3 Trask Lane Darwers, MA 01923 USA 978-867-2300 TEL 978-867-2400 FAX 978-578-6737 EMERGENCY TEL

II. Composition/Information:

Ingredients:	Percent	CAS#
Bovine Saline Albumin	5%	9048-46-8
Tween20	<1%	9005-64-5
Kathon	< 0.5%	55965-84-
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. OSHAR Not considered hazardous. ELE Integrider Klandin (0.5%) X: Iritlant. RSig/38-43-52/53

EU: Higherian Ramon Joseph Routes of Exposure:
Skin Exposure: May case skin irritation. May be harmful if absorbed through skin.
Skip 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:

1.v. FIFSL FALG INVEASUITES:
Inhalation: Pemove 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.

Eve 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.

Altrogration temperature Explosion. Not applicable. Fire extinguishing media: Water spray, dry chemical, foam, or carbon dioxide. Fireflighting: Water protective clothing and self-contained breathing apparatus to pre-Specific Hazard: None.

VI. Accidental Release Measures: Wear appropriate person 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.

Site differ repaired.

VII. Handling And Storage:

VII. Handling And Storage: Store at 4°C in tightly closed container. Do not breathe vapor. Avoid contact with ey and clothing. Wash thoroughly after handling. Avoid prolonged or repeated exposure.

VIII. Exposure Controls/Personal:

Ventilation System: A system of local (time host) and general exhaust is recommended.

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

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

IX. Physical And Chemical Properties

Appearance: Odor: colorless liquid uoor:
ph:
Boiling Point:
Melting Point:
Freezing Point:
Volatile Organic Compounds (VOC):
Autoignition temp.:
Solubility in water:

X. Stability and Reactivity:

Stability: Stable.
Conditions/materials to avoid: Bases, oxidizing agents.
Hazardous Decomposition: Data not available.
Hazardous polymerization: Will not occur.

XI. Toxicological Information:

Routes of Exposure: Skin Exposure: May case skin irritation. May be harmful if absorbed through skin. Eye Exposure: May case 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 fee 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 Llisted: Index #: 613-167-00-5
0.5% Kathon concentration classification: X: Infrain. 1836/38-43-52/53
R8508: Were suitable protective clothing, gloves and eye/face protection
R43: May cause sensitization by skin contact.

RSS: 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:
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:

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 sale use of this product in a biobacty setting by experienced personnel. The burden of sale use of this product in a biobacty setting by 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, finc., shall not be held liable for any damage resulting from the headings of or from contact with the above product.

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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: 7982 Kit component CAS#: None Manufacturer Supplier: Cell Signaling Technology

3 Trask Lane
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:

Not considered hazardous. ial Health Effects: No known significant effects of critical hazards. OSHA: Not consid Potential Health Routes of Exposi

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. It breathing is difficult, get medical attention. Ingestion: If person is conscious, wash out mouth with water. Get medical attention. Skin exposure: Warts skin with sogn and water. It irritation develops or persists, get medical

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.

Explosion: Not applicable.

Fire extinguishing media: Water spray, dry chemical, toam, or carbon dioxide.

Firefighting: West 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. Alsorb liquid with an absorbent materix Transfer contaminated absorbent to a closed chemical waste container for disposal. Wash site after material has been picked up for disposal.

VII. Handling And Storage: Store at 4°C in tightly closed container. Avoid contact w thoroughly after handling. Avoid prolonged or repeated

VIII. Exposure Controls/Personal: Ventilation System: A system of local (fume hood) and gener

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

IX. Physical And Chemical Properties

Appearance: Odor: data not available pri: custa not available
Bolling Point: custa not available
Melting Point: data not available
Freezing Point: custa not available
data not available
solubility in water: soluble in water

X. Stability and Reactivity:

Conditions/materials to avoid: Data not available.

Hazardous Decomposition: Data not available. Hazardous polymerization: should not occur under normal condition of storage and use

XI. Toxicological Information:
To the best of our knowledge, the chemical, physical, and toxicological properties have not

been thoroughly investigated.

Potential Health Effects: No known significant effects of critical hazards.

Potential rearum Enterlas, no monographic Routes of Exposure:
Skin Exposure: No known significant effects of critical hazards.
Eye Exposure: No known significant effects of critical hazards.
Ingastion: No known significant effects of critical hazards.

XII. Ecological Information: Data not available. XIII. Disposal Considerations: Dispose of in accordance with federal, state and local environmental reputations. This product is not considered hazardous waste.

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: INot classified OSHA: No known hazards.

Corner, or Nation Hazardo.

Camadian DSI: Not Libert.
SARA 302, 313: Not Libert.
SARA 3102, 314: Not Libert.
Missacahoustis Right To Know: Not Libed. Pennsylvania Right To Know: Not Listed.
Missacahoustis Right To Know: Not Listed. California Prop. 65: Not Listed.

XVI. Other Information:

This product is not interded for use in humans. To the best of our knowledge, this document is accurate. It is intended to serve as quide 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 necessary all-inclusives and shall be used only as a guide. Cell Signating Technology, the, shall not be held liable for any damage resulting from the handling of or from conduct with the above product.

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



I. Identification:

Product name: 20X LumiGLO® and 20X Perovide
Product Catalog: 703
CAS number: None
Manufacturer Supplier: Cell Signaling Technology
3 Tirstk. Line
100
Manufacturer Supplier: Cell Signaling Technology
100
Minus Line
10

II. Composition/Information on Ingredients:

Hazardous Reagent: Dimethyl sulfoxide Percent CAS#

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

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

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

V. Fire Fighting Measures:

Expression. Ny.

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

Fireflighting, wear protective clothing and self-contained breathing apparatus to prevent contact with skin and eyes. May emit toxic furnes 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 fo 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 Prolection: wear compatible chemical resistant gloves and protective clothing.

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

IX. Physical And Chemical Properties:

Boiling Point: >100°C/212"F (water) <0"C/32'F (water) Melting or Freezing Point: Flash Point: Volatile Organic Compounds (VOC): data not available data not available

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 ishorted through skin. Causes skin irritation. Eyes: Causes get irritation. Ingestion: Harmful if swallowed.

Toxicity Data on Hazardous ingredient Dimethyl Sulfoxide, CAS#67-68-5 RTECS: PV6210000 LD50 Oral art 14,500 mg/kg LD50 Inhatation art 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 ions. Contact a licensed professional waste federal, state and local environmental regula disposal service to dispose of this material.

XIV. Transport Information:

transport.

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

XV. Regulatory Information:

EU: Not classified

SORH: Ingredient Dimethyl Sulfoxide, CAS/67-88-5: Combustible Liquid, Target Organ Effect
Canadian DSL: Listed: Ingredient Dimethyl Sulfoxide, CAS/67-68-5

ARA 30.2 313 gredient Not Listed.

SARA 30.2 313 gredient Dimethyl Sulfoxide, CAS/67-68-5: Fire Hazard, Chronic Health

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 irrended for use in humans. To the best of our knowledge, this connect is accusate. It is intended to serve as a guide for safe use of this product in a babonatory setting by experienced personnel. The burden of safe use of this medical rests entitled with the user. The above information is believed to be accusate but so no necessarily all-inclusive and shall be used only as a guide. Cell Signaling fectionology, Inc., shall not be held iable for any damage resulting from the handling of or from contact with the above product.