



Human-Lats2 Mouse Monoclonal Antibody

Product Data Sheet

For Research Use Only, Not for use in diagnostic procedures

Human-Lats2 Mouse Monoclonal Antibody (Clone ST-3D10)

Cat# CY-M1030

100 µg (1 mg/ml x 100 µL)

Clone Name	Applications	Species Cross-reactivity	Molecular Wt.	Source Isotype
ST-3D10	WB, IP	H	125 kDa	Mouse IgG1

Background: Lats2 is a new member of the Lats tumor suppressor family. The human LATS2 gene is located at chromosome 13q11-12, which has been shown to be a hot spot (67%) for LOH in nonsmall cell lung cancer.

The Drosophila “large tumor suppressor” (lats) gene encodes a putative serine/threonine kinase. By screening a human testis cDNA library with a mouse LATS2 cDNA, Yabuta et al. (2000) isolated a partial human LATS2 cDNA. The human LATS2 cDNA encodes a deduced 1,046-amino acid partial protein lacking N-terminal sequence. LATS2 contains a PAPA repeat consisting of 7 copies of the dipeptide proline-alanine, which may be involved in protein-protein interactions, and a C-terminal serine/threonine kinase domain. Analysis of the amino acid sequences of the human and mouse LATS2 kinase domains indicated that the LATS2 proteins are most closely related to the LATS1 proteins, followed by Drosophila Lats, among known serine/threonine kinases. Immunoblot analysis of human cell lines showed that endogenous LATS2 is a nuclear protein of approximately 125 kD. Northern blot analysis detected a 5.8-kb LATS2 transcript in several human tissues, with highest expression in heart and skeletal muscle.

Specificity/Sensitivity: Human Lats2 Monoclonal Antibody detects human Lats2 by western blotting and IP-western blotting.

Source/Purification: Monoclonal antibody is produced by immunizing mice with a recombinant Lats2N, corresponding N-terminal portion of human Lats2. IgG is purified by protein A-sepharose chromatography.

Recommended Antibody Dilutions: Western blotting: 1-2 ug/mL, IP: 1-2 ug/sample.

Storage: Supplied in 20 mM phosphate buffer (pH 7.5), 300 mM NaCl, 50 % glycerol. Store at -20°C.

Applications Key: WB:Western Blotting IP:Immunoprecipitation IHC:Immunohistochemistry IC:Immunocytochemistry F:Flow cytometry E:ELISA FP:Fluorescence Polarization assay

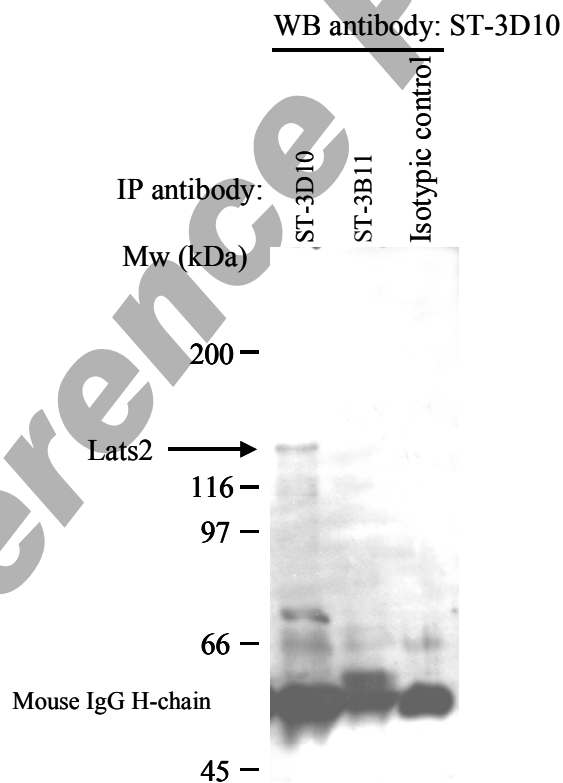
Species Cross-Reactivity Key: H:human M:mouse R:rat Hm:hamster Mk:monkey Mi:mink C:chicken X:Xenopus Z:zebra fish All:all species expected Species enclosed in parentheses are predicted to react based on 100% sequence homology.



Selected Application References:

1. Tao, W.; Zhang, S.; Turenchalk, G. S.; Stewart, R. A.; St. John, M. A. R.; Chen, W.; Xu, T. Human homologue of the *Drosophila melanogaster* lats tumour suppressor modulates CDC2 activity. *Nature Genet.* **21**, 177-181, 1999.
2. Li Y, Pei J, Xia H, Ke H, Wang H, Tao W. Lats2, a putative tumor suppressor, inhibits G1/S transition. *Oncogene.* **22**(28):4398-405, 2003
3. Ishizaki K, Fujimoto J, Kumimoto H, Nishimoto Y, Shimada Y, Shinoda M, Yamamoto T. Frequent polymorphic changes but rare tumor specific mutations of the LATS2 gene on 13q11-12 in esophageal squamous cell carcinoma. *Int J Oncol.* **21**(5):1053-7, 2002
4. Yabuta N, Fujii T, Copeland NG, Gilbert DJ, Jenkins NA, Nishiguchi H, Endo Y, Toji S, Tanaka H, Nishimune Y, Nojima H. Structure, expression, and chromosome mapping of LATS2, a mammalian homologue of the *Drosophila* tumor suppressor gene lats/warts. *Genomics.* **63**(2):263-70, 2000
5. The centrosomal protein Lats2 is a phosphorylation target of Aurora-A kinase. Toji S, Yabuta N, Hosomi T, Nishihara S, Kobayashi T, Suzuki S, Tamai K, Nojima H. *Genes Cells.* **9**(5): 383-97, 2004

Fig.1 IP-Western blot analysis of human Lats2 using HeLa cell extract





Western Immunoblotting Protocol

Solutions and Reagents

Note: Prepare solutions with Milli-Q or equivalently purified water.

Transfer Buffer: 25 mM Tris base, 0.2 M glycine, 20% methanol (pH 8.5)

SDS Sample Buffer (1X): 62.5 mM Tris-HCl (pH 6.8 at 25°C), 2% w/v SDS, 10% glycerol, 50 mM DTT, 0.01% w/v bromophenol blue or phenol red

Blocking Buffer: 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk; for 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).

10X TBS (Tris-buffered saline): To prepare 1 liter of 10X TBS: 24.2 g Tris base, 80 g NaCl; adjust pH to 7.6 with HCl (use at 1X).

Primary Antibody Dilution Buffer: 1X TBS, 0.1% Tween-20 with 5% blocking agent; for 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 1.0 g BSA and mix well. While stirring, add 20 µl Tween-20 (100%).

Chemiluminescent HRP Detection: secondary anti-rabbit antibody conjugated to horseradish peroxidase (HRP), ECL™ chemiluminescent reagent (Amersham Pharmacia)

Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20

Blotting Membrane: This protocol has been optimized for nitrocellulose membranes, which we recommend. PVDF membranes may also be used.

Protein Blotting

A general protocol for sample preparation is described below.

1. Treat cells by adding fresh media containing regulator for desired time.
2. Aspirate media from cultures; wash cells with 1X PBS; aspirate.
3. Lyse cells by adding 1X SDS Sample Buffer (100 µl per well of 6-well plate or 500 µl per plate of 10 cm² plate). Immediately scrape the cells off the plate and transfer the extract to a microcentrifuge tube. Keep on ice.
4. Sonicate for 10–15 seconds to shear DNA and reduce sample viscosity.
5. Heat a 20 µl sample to 95–100°C for 5 minutes; cool on ice.
6. Microcentrifuge for 5 minutes.
7. Load 20 µl onto SDS-PAGE gel (10 cm x 10 cm).
8. Electrotransfer to nitrocellulose membrane.

Membrane Blocking and Antibody Incubations

Note: Volumes are for 10 cm x 10 cm (100 cm²) of membrane; for different sized membranes, adjust volumes accordingly.

1. (Optional) After transfer, wash nitrocellulose membrane with 25 ml TBS for 5 minutes at room temperature.
2. Incubate membrane in 25 ml of Blocking Buffer for 1 hour at room temperature.
3. Wash 3 times for 5 minutes each with 15 ml of TBS/T.
4. Incubate membrane and primary antibody (at the appropriate dilution) in 10 ml Primary Antibody Dilution Buffer with gentle agitation overnight at 4°C.
5. Wash 3 times for 5 minutes each with 15 ml of TBS/T.
6. Incubate membrane with HRP-conjugated secondary antibody (1:3000 in 10 ml of Blocking Buffer with gentle agitation for 1 hour at room temperature.
7. Wash 3 times for 5 minutes each with 15 ml of TBS/T.

Detection of Proteins

1. Incubate membrane with 4 ml ECL™ with gentle agitation for 1 minute at room temperature.



2. Drain membrane of excess developing solution, do not let dry, wrap in plastic wrap and expose to x-ray film. An initial ten seconds exposure should indicate the proper exposure time.

Immunoprecipitation Followed by Western Immunoblotting Protocol

Solutions and Reagents

Note: Prepare solutions with Milli-Q or equivalently purified water.

Cell Lysis Buffer (1X): 20 mM Tris (pH 7.5), 150 mM NaCl, 1 mM EDTA, 1 mM EGTA, 1% Triton X-100, 2.5 mM sodium pyrophosphate, 1 mM Glycerolphosphate, 1 mM Na_3VO_4 , 1 $\mu\text{g/ml}$ Leupeptin

Note: We recommend adding 1 mM PMSF before use.

Protein A Agarose Beads: Add 5 ml of 1X PBS to 1.5 g of Protein A Agarose Beads. Shake 2 hours at 4°C; spin down. Wash pellet twice with PBS. Resuspend beads in 1 volume of PBS. (Can be stored for 2 weeks at 4°C)

3X SDS Sample Buffer: 187.5 mM Tris-HCl (pH 6.8 at 25°C), 6% w/v SDS, 30% glycerol, 150 mM DTT, 0.03% w/v bromophenol blue,

Transfer Buffer: 25 mM Tris base, 0.2 M glycine, 20% methanol (pH 8.5)

Blocking Buffer: 1X TBS, 0.1% Tween-20 with 5% w/v nonfat dry milk. For 150 ml, add 15 ml 10X TBS to 135 ml water, mix. Add 7.5 g nonfat dry milk and mix well. While stirring, add 0.15 ml Tween-20 (100%).

10X TBS (Tris-buffered saline): For 1 liter of 10X TBS, use 24.2 g Tris base and 80 g NaCl. Adjust pH to 7.6 with HCl (use at 1X).

Primary Antibody Dilution Buffer: 1X TBS, 0.05% Tween-20 with 5% nonfat dry milk. For 20 ml, add 2 ml 10X TBS to 18 ml water, mix. Add 1.0 g nonfat dry milk and mix well. While stirring, add 10 μl Tween-20 (100%).

Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20

Chemiluminescent HRP Detection: secondary anti-rabbit antibody conjugated to horseradish peroxidase (HRP), ECL™ chemiluminescent reagent (Amersham Pharmacia)

Wash Buffer TBS/T: 1X TBS, 0.1% Tween-20

Blotting Membrane: This protocol has been optimized for nitrocellulose membranes, which we recommend. PVDF membranes may also be used.

Preparing Cell Lysates

1. Aspirate media. Treat cells by adding fresh media containing regulator for desired time.
2. To harvest cells under non-denaturing conditions, remove media and rinse cells once with ice-cold PBS.
3. Remove PBS and add 0.5 ml 1X ice-cold Cell Lysis Buffer plus 1 mM PMSF to each plate (10 cm²) and incubate the plate on ice for 5 minutes.
4. Scrape cells off the plate and transfer to microcentrifuge tubes. Keep on ice.
5. Sonicate 4 times for 5 seconds each on ice.
6. Microcentrifuge for 10 minutes at 4°C, and transfer the supernatant to a new tube. The supernatant is the cell lysate. If necessary, lysate can be stored at -80°C.

Immunoprecipitation

1. Take 200 μL cell lysate and add primary antibody; incubate with gentle rocking overnight at 4°C.
2. Add Protein A Agarose Beads (20 μL of 50% bead slurry). Incubate with gentle rocking for 1–3 hours at 4°C.
3. Microcentrifuge for 30 seconds at 4°C. Wash pellet 2 times with 500 μL of 1X Cell Lysis Buffer. Keep on ice during washes.
4. Resuspend the pellet with 20 μL 3X SDS Sample Buffer. Vortex, then, microcentrifuge for 30 seconds.
5. Heat the sample to 95–100°C for 2–5 minutes.
6. Load the sample (15–30 μL) on SDS-PAGE gel (12–15%).
7. Analyze sample by Western blotting (see Western Immunoblotting Protocol).



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CycLex Co., Ltd.
1063-103 Terasawaoka
Ina, Nagano 396-0002
Japan
Fax: +81-265-76-7618
e-mail: info@cyclex.co.jp
URL: <http://www.cyclex.co.jp>

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