

MASTL, Active

Full-length recombinant human protein expressed in Sf9 cells

Catalog # M72-10G

Lot # Q2465-8

Product Description

Full-length recombinant human MASTL was expressed by baculovirus in Sf9 insect cells using an N-terminal GST tag. The gene accession number for MASTL is [NM_001172303](#).

Gene Aliases

GREATWALL; GW; GWL; hGWL; RP11-85G18.2; THC2

Formulation

Recombinant protein stored in 50mM Tris-HCl, pH 7.5, 150mM NaCl, 10mM glutathione, 0.1mM EDTA, 0.25mM DTT, 0.1mM PMSF, and 25% glycerol.

Storage and Stability

Store product at -70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles.

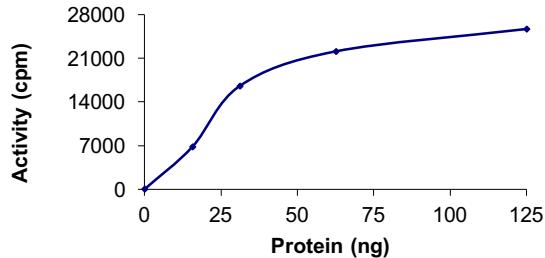
Scientific Background

Microtubule associated serine/threonine kinase-like (MASTL) belongs to the MAST family, AGC Ser/Thr protein kinase group. MASTL promotes mitotic progression and cell cycle reentry after DNA damage. Loss of MASTL leads to defects in chromosome condensation, separation, and other aspects of mitotic progression, which is primarily mediated by inhibiting PP2A/B55 δ . Overexpression of MASTL is correlated with cancer progression, poor patient survival, and tumor recurrence in various cancers.

References

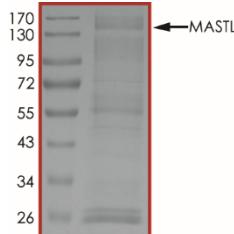
- Wang L, et al. Mastl kinase, a promising therapeutic target, promotes cancer recurrence. *Oncotarget*. 5:11479-89, 2014.
- Zhao Y, et al. Roles of Greatwall kinase in the regulation of cdc25 phosphatase. *Mol Biol Cell*. 19:1317-27, 2008.

Specific Activity



The specific activity of MASTL was determined to be **16.2 nmol /min/mg** as per activity assay protocol.

Purity



The purity of MASTL protein was determined to be **~70%** by densitometry, MASTL approx. MW **150kDa**.

MASTL, Active

Full-length recombinant human protein expressed in Sf9 cells

Catalog #	M72-10G
Specific Activity	16.2 nmol/min/mg
Lot #	Q2465-8
Purity	~70%
Concentration	0.05 µg/µl
Stability	1yr at -70°C from date of shipment
Storage & Shipping	Store product at -70°C. For optimal storage, aliquot target into smaller quantities after centrifugation and store at recommended temperature. For most favorable performance, avoid repeated handling and multiple freeze/thaw cycles. Product shipped on dry ice.

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Activity Assay Protocol

Reaction Components

Active Kinase (Catalog #: M72-10G)

Active MASTL (0.05 μ g/ μ l) diluted with Kinase Dilution Buffer III (Catalog #: K23-09) and assayed as outlined in sample activity plot. (Note: these are suggested working dilutions and it is recommended that the researcher perform a serial dilution of Active MASTL for optimal results).

Kinase Dilution Buffer III (Catalog #: K23-09)

Kinase Assay Buffer I (Catalog #: K01-09) diluted at a 1:4 ratio (5X dilution) with 50ng/ μ l BSA solution.

Kinase Assay Buffer I (Catalog #: K01-09)

Buffer components: 25mM MOPS, pH 7.2, 12.5mM β -glycerol-phosphate, 25mM MgCl₂, 5mM EGTA, 2mM EDTA. Add 0.25mM DTT to Kinase Assay Buffer prior to use.

[³³P]-ATP Assay Cocktail

Prepare 250 μ M [³³P]-ATP Assay Cocktail in a designated radioactive working area by adding the following components: 150 μ l of 10mM ATP Stock Solution (Catalog #: A50-09), 100 μ l [³³P]-ATP (1mCi/100 μ l), 5.75ml of Kinase Assay Buffer I (Catalog #: K01-09). Store 1ml aliquots at -20°C.

10mM ATP Stock Solution (Catalog #: A50-09)

Prepare ATP stock solution by dissolving 55mg of ATP in 10ml of Kinase Assay Buffer I (Catalog #: K01-09). Store 200 μ l aliquots at -20°C.

Substrate (Catalog #: A76-54G)

ARPP19 Protein substrate diluted in distilled H₂O to a final working concentration, such as 0.5mg/ml.

Assay Protocol

- Step 1. Thaw [³³P]-ATP Assay Cocktail in shielded container in a designated radioactive working area.
- Step 2. Thaw the Active MASTL, Kinase Assay Buffer, Substrate and Kinase Dilution Buffer on ice.
- Step 3. In a pre-cooled microfuge tube, add the following reaction components bringing the initial reaction volume up to 20 μ l:
 - Component 1. 10 μ l of diluted Active MASTL (Catalog #M72-10G)
 - Component 2. 5 μ l of 0.5mg/ml working solution of substrate (Catalog # A76-54G)
 - Component 3. 5 μ l distilled H₂O (4°C)
- Step 4. Set up the blank control as outlined in step 3, excluding the addition of the substrate. Replace the substrate with an equal volume of distilled H₂O.
- Step 5. Initiate the reaction by the addition of 5 μ l [³³P]-ATP Assay Cocktail bringing the final volume up to 25 μ l and incubate the mixture in a water bath at 30°C for 30 minutes.
- Step 6. After the 15 minute incubation period, terminate the reaction by spotting 20 μ l of the reaction mixture onto individual pre-cut strips of phosphocellulose P81 paper.
- Step 7. Air dry the pre-cut P81 strip and sequentially wash in a 1% phosphoric acid solution (dilute 10ml of phosphoric acid and make a 1L solution with distilled H₂O) with constant gentle stirring. It is recommended that the strips be washed a total of 3 intervals for approximately 10 minutes each.
- Step 8. Count the radioactivity on the P81 paper in the presence of scintillation fluid in a scintillation counter.
- Step 9. Determine the corrected cpm by removing the blank control value (see Step 4) for each sample and calculate the kinase specific activity as outlined below.

Calculation of [³³P]-ATP Specific Activity (SA) (cpm/pmol)

Specific activity (SA) = cpm for 5 μ l [³³P]-ATP / pmoles of ATP (in 5 μ l of a 250 μ M ATP stock solution, i.e., 1250 pmoles)

Kinase Specific Activity (SA) (pmol/min/ μ g or nmol/min/mg)

Corrected cpm from reaction / [(SA of ³³P-ATP in cpm/pmol)*(Reaction time in min)*(Enzyme amount in μ g or mg)]*[(Reaction Volume) / (Spot Volume)]

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