SANTA CRUZ BIOTECHNOLOGY, INC.

Mat1 (M-20): sc-1600

BACKGROUND

Progression through the cell cycle requires activation of a series of enzymes designated cyclin dependent kinases (Cdks). The monomeric catalytic subunit, Cdk2, a critical enzyme for initiation of cell cycle progression, is completely inactive. Partial activation is achieved by the binding of regulatory cyclins such as cyclin D1, while full activation requires phosphorylation at Thr 160. The enzyme responsible for phosphorylation of Thr 160 in Cdk2 and also Thr 161 in Cdc2 p34, designated Cdk-activating kinase (CAK), has been partially purified and shown to be comprised of a catalytic subunit, a regulatory subunit and a subunit of unknown function. The regulatory subunit is a novel cyclin (cyclin H) and is required for activation of Cdk7. This previously undescribed protein, now termed Mat1, has been cloned as a protein that associates with the cyclin H-Cdk7 nuclear complex at all stages of the cell cycle. Cyclin H-Cdk7-Mat1 complexes display kinase activity towards Cdk activation domains, and the carboxy terminus of RNA polymerase II. Mat1 appears to constitute the first example of an assembly factor, essential for the formation of an active Cdk-cyclin complex.

REFERENCES

1. Nurse, P. 1994. Ordering S phase and M phase in the cell cycle. Cell 79: 547-550.
2. Sherr, C.J. 1994. G_1 phase progression: cycling on cue. Cell 79: 551-555.
3. Hunter, T., et al. 1994. Cyclins and cancer II: cyclin D and Cdk inhibitors come of age. Cell 79: 573-582.
4. Kato, J.Y., et al. 1994. Regulation of cyclin D-dependent kinase 4 (Cdk4) by Cdk4-activating kinase. Mol. Cell. Biol. 14: 2713-2721.
5. Matsuoka, M., et al. 1994. Activation of cyclin-dependent kinase 4 (Cdk4) by mouse MO15-associated kinase. Mol. Cell. Biol. 14: 7265-7275.
6. Fisher, R.P., et al. 1995. Alternative mechanisms of CAK assembly require an assembly factor or an activating kinase. Cell 83: 47-57.
7. Yee, A., et al. 1995. Molecular cloning of Cdk7-associated human Mat1, a cyclin-dependent kinase-activating kinase (CAK) assembly factor. Cancer Res. 55: 6058-6062.

CHROMOSOMAL LOCATION

Genetic locus: MNAT1 (human) mapping to 14q23.1; Mnat1 (mouse) mapping to 12 C3.

SOURCE

Mat1 (M-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of Mat1 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-1600 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Mat1 (M-20) is recommended for detection of Mat1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Mat1 (M-20) is also recommended for detection of Mat1 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for Mat1 siRNA (h): sc-35861, Mat1 siRNA (m): sc-35862, Mat1 shRNA Plasmid (h): sc-35861-SH, Mat1 shRNA Plasmid (m): sc-35862-SH, Mat1 shRNA (h) Lentiviral Particles: sc-35861-V and Mat1 shRNA (m) Lentiviral Particles: sc-35862-V.

Molecular Weight of Mat1: 36 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, A-673 cell lysate: sc-2414 or NIH/3T3 nuclear extract: sc-2138.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Crescenzi, E., et al. 2003. Bcl-2 activates a programme of premature senescence in human carcinoma cells. Biochem. J. 375: 263-274.
2. Wang, J.G., et al. 2006. Retinoic acid induces leukemia cell G_1 arrest and transition into differentiation by inhibiting cyclin-dependent kinase-activating kinase binding and phosphorylation of PML/RARα. FASEB J. 20: 2142-2144.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.