SANTA CRUZ BIOTECHNOLOGY, INC.

Mat1 (F-6): sc-13142

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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.

CHROMOSOMAL LOCATION

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

SOURCE

Mat1 (F-6) is a mouse monoclonal antibody raised against amino acids 1-309 of Mat1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Mat1 (F-6) is available conjugated to agarose (sc-13142 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-13142 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-13142 PE), fluorescein (sc-13142 FITC), Alexa Fluor® 488 (sc-13142 AF488), Alexa Fluor® 546 (sc-13142 AF546), Alexa Fluor® 594 (sc-13142 AF594) or Alexa Fluor® 647 (sc-13142 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-13142 AF680) or Alexa Fluor® 790 (sc-13142 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

In addition, Mat1 (F-6) is available conjugated to TRITC (sc-13142 TRITC, 200 µg/ml), for IF, IHC(P) and FCM.

STORAGE

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

APPLICATIONS

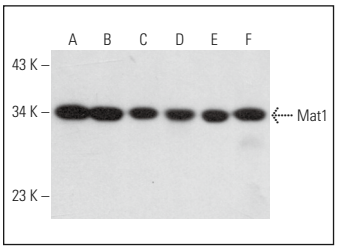
Mat1 (F-6) is recommended for detection of Mat1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:500), immunoprecipitation [1-2 µg per 100-500 µg of total protein(1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

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.

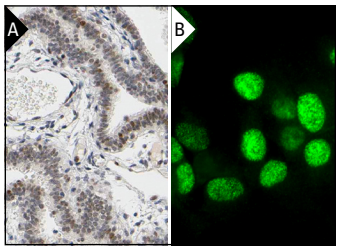
Molecular Weight of Mat1: 36 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, HeLa whole cell lysate: sc-2200 or NIH/3T3 whole cell lysate: sc-2210.

DATA



Mat1 (F-6): sc-13142. Western blot analysis of Mat1 expression in A-431 (**A**), NIH/3T3 (**B**), RAW 264.7 (**C**), HeLa (**D**), Hep G2 (**E**) and KNRK (**F**) whole cell lysates.



Mat1 (F-6): sc-13142. Immunoperoxidase staining of formalin fixed, paraffin-embedded human fallopian tube tissue showing nuclear staining of glandular cells. Kindly provided by The Swedish Human Protein Atlas (HPA) program (**A**). Immunofluorescence staining of formalin-fixed Hep G2 cells showing nuclear localization (**B**).

SELECT PRODUCT CITATIONS

1. Tamrakar, S., et al. 2005. Human cytomegalovirus infection induces specific hyperphosphorylation of the carboxyl-terminal domain of the large subunit of RNA polymerase II that is associated with changes in the abundance, activity, and localization of Cdk9 and Cdk7. J. Virol. 79: 15477-15493.
2. Ganuza, M., et al. 2012. Genetic inactivation of Cdk7 leads to cell cycle arrest and induces premature aging due to adult stem cell exhaustion. EMBO J. 31: 2498-2510.
3. Bisteau, X., et al. 2013. Cdk4 T172 phosphorylation is central in a Cdk7-dependent bidirectional Cdk4/Cdk2 interplay mediated by p21 phosphorylation at the restriction point. PLoS Genet. 9: e1003546.
4. Kim, M.Y., et al. 2018. Mbd2-CP2c loop drives adult-type globin gene expression and definitive erythropoiesis. Nucleic Acids Res. 46: 4933-4949.

RESEARCH USE

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