SANTA CRUZ BIOTECHNOLOGY, INC.

FCP1 (3G4): sc-293358

BACKGROUND

RNA polymerase II (RNAP II) comprises a 12 subunit protein complex that mediates transcription. RNAP II contains a unique carboxy terminal domain (CTD), which consists of 52 repeats of the consensus heptapeptide Tyr-Ser-Pro-Thr-Ser-Pro-Ser. The RNAP II isoform with an unphosphorylated CTD associates with transcription initiation complexes, whereas the isoform with a phosphorylated CTD is involved in transcription elongation. FCP1, also designated TFIIF-associated CTD phosphatase, is a protein phosphatase dedicated to the CTD of RNAP II that mediates the recycling of RNAP II during the transcription cycle. FCP1 specifically targets phosphorylated CTD Serine 2 and 5 with similar affinities. Phosphorylation of FCP1 itself is necessary for sufficient activity of the protein and its interaction with TFIIF. Upon activation, the α-helical carboxy terminus of FCP1 binds to RAP74 to form a complex. FCP1 also represses HIV-1 Tat-mediated transactivation, and, therefore, may represent a specific target for modulation of Tat activity in infected cells.

REFERENCES

1. Licciardo, P., Ruggiero, L., Lania, L. and Majello, B. 2001. Transcription activation by targeted recruitment of the RNA polymerase II CTD phosphatase FCP1. Nucleic Acids Res. 29: 3539-3545.
2. Licciardo, P., Napolitano, G., Majello, B. and Lania, L. 2001. Inhibition of Tat transactivation by the RNA polymerase II CTD-phosphatase FCP1. AIDS 15: 301-307.
3. Mandal, S.S., Cho, H., Kim, S., Cabane, K. and Reinberg, D. 2002. FCP1, a phosphatase specific for the heptapeptide repeat of the largest subunit of RNA polymerase II, stimulates transcription elongation. Mol. Cell. Biol. 22: 7543-7552.
4. Lin, P.S., Dubois, M.F. and Dahmus, M.E. 2002. TFIIF-associating carboxyl-terminal domain phosphatase dephosphorylates phosphoserines 2 and 5 of RNA polymerase II. J. Biol. Chem. 277: 45949-45956.
5. Kamada, K., Roeder, R.G. and Burley, S.K. 2003. Molecular mechanism of recruitment of TFIIF- associating RNA polymerase C-terminal domain phosphatase (FCP1) by transcription factor IIF. Proc. Natl. Acad. Sci. USA 100: 2296-2299.
6. Friedl, E.M., Lane, W.S., Erdjument-Bromage, H., Tempst, P. and Reinberg, D. 2003. The C-terminal domain phosphatase and transcription elongation activities of FCP1 are regulated by phosphorylation. Proc. Natl. Acad. Sci. USA 100: 2328-2333.

CHROMOSOMAL LOCATION

Genetic locus: CTDP1 (human) mapping to 18q23.

SOURCE

FCP1 (3G4) is a mouse monoclonal antibody raised against amino acids 332-431 of FCP1 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

FCP1 (3G4) is recommended for detection of FCP1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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), flow cytometry (1 µg per 1 x 10^6 cells) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for FCP1 siRNA (h): sc-44888, FCP1 shRNA Plasmid (h): sc-44888-SH and FCP1 shRNA (h) Lentiviral Particles: sc-44888-V.

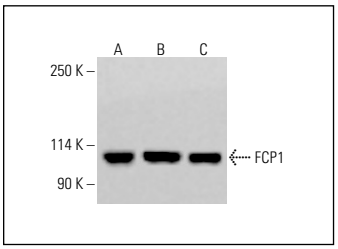
Molecular Weight of FCP1: 104 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, HCT-116 whole cell lysate: sc-364175 or HeLa whole cell lysate: sc-2200.

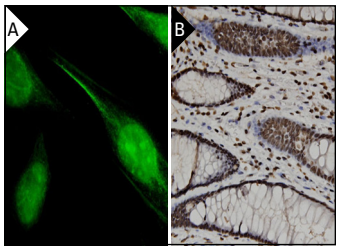
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



FCP1 (3G4): sc-293358. Western blot analysis of FCP1 expression in HeLa (**A**), K-562 (**B**) and HCT-116 (**C**) whole cell lysates. Detection reagent used: m-IgG Fc BP-HRP: sc-525409.



FCP1 (3G4): sc-293358. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic and nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human colon tissue showing cytoplasmic and nuclear staining (**B**).

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.