SANTA CRUZ BIOTECHNOLOGY, INC.

4E-BP1 (FL): sc-4251

SANTA CRUZ BIOTECHNOLOGY
The Power to Question

BACKGROUND

The translation of proteins from eukaryotic mRNA is initiated by the multi-subunit complex eIF4F, which associates with the mRNA 5' cap structure. eIF-4E, a component of eIF-4F, is responsible for binding to the 5' cap structure and for the assembly of the eIF-4F complex. The 12.4 kDa regulatory protein 4E-BP1, also referred to as PHAS-I, inhibits eIF-4E function. Phosphorylation of 4E-BP1 by S6 kinase p70, MAP kinases or PKCs causes the disassociation of 4E-BP1 from eIF-4E, promoting translation. A protein that is functionally related fo 4E-BP1, designated 4E-BP2, also associates with eIF-4E.

REFERENCES

1. Lin, T.A., Kong, X., Haystead, T.A., Pause, A., Belsham, G., Sonenberg, N. and Lawrence, J.C., Jr. 1994. PHAS-I as a link between mitogen-activated protein kinase and translation initiation. Science 266: 653-656.
2. Whalen, S.G., Gingras, A.C., Amankwa, L., Mader, S., Branton, P.E., Aebersold, R. and Sonenberg, N. 1996. Phosphorylation of eIF-4E on Serine 209 by protein kinase C is inhibited by the translational repressors, 4E-binding proteins. J. Biol. Chem. 271: 11831-11837.
3. Rau, M., Ohlmann, T., Morley, S.J. and Pain, V.M. 1996. A reevaluation of the cap-binding protein, eIF4E, as a rate-limiting factor for initiation of translation in reticulocyte lysate. J. Biol. Chem. 271: 8983-8990.
4. Diggle, T.A., Moule, S.K., Avison, M.B., Flynn, A., Foulstone, E.J., Proud, C.G. and Denton, R.M. 1996. Both rapamycin-sensitive and -insensitive pathways are involved in the phosphorylation of the initiation factor-4E-binding protein (4E-BP1) in response to Insulin in rat epididymal fat-cells. Biochem. J. 316: 447-453.
5. Beretta, L., Gingras, A.C., Svitkin, Y.V., Hall, M.N. and Sonenberg, N. 1996. Rapamycin blocks the phosphorylation of 4E-BP1 and inhibits cap-dependent initiation of translation. EMBO J. 15: 658-664.
6. Mendez, R., Myers, M.G., Jr., White, M.F. and Rhoads, R.E. 1996. Stimulation of protein synthesis, eukaryotic translation initiation factor 4E phosphorylation, and PHAS-I phosphorylation by Insulin requires Insulin receptor substrate 1 and phosphatidylinositol 3-kinase. Mol. Cell. Biol. 16: 2857-2864.
7. Von Manteuffel, S.R., Gingras, A.C., Ming, X.F., Sonenberg, N. and Thomas, G. 1996. 4E-BP1 phosphorylation is mediated by the FRAP-p70s6k pathway and is independent of mitogen-activated protein kinase. Proc. Natl. Acad. Sci. USA 93: 4076-4080.

SOURCE

4E-BP1 (FL) is expressed in *E. coli* as a 21 kDa polyhistidine fusion protein corresponding to amino acids 1-117 representing full length 4E-BP1 of rat origin.

PRODUCT

4E-BP1 (FL) is purified from bacterial lysates by NI^{++} affinity chromatography; supplied as 50 µg protein in PBS containing 5 mM DTT and 50% glycerol.

APPLICATIONS

4E-BP1 (FL) functions as a substrate for FRAP and MAP kinases; suitable as a Western blotting control for sc-6024, sc-6025 and sc-6936.

SELECT PRODUCT CITATIONS

1. Tabatabaian, F., Dougherty, K., Di Fulvio, M. and Gomez-Cambronero, J. 2010. Mammalian target of rapamycin (mTOR) and S6 kinase down-regulate phospholipase D2 basal expression and function. J. Biol. Chem. 285: 18991-19001.
2. Jackman, S.R., Witard, O.C., Philp, A., Wallis, G.A., Baar, K. and Tipton, K.D. 2017. Branched-chain amino acid ingestion stimulates muscle myofibrillar protein synthesis following resistance exercise in humans. Front. Physiol. 8: 390.

STORAGE

Store at -20° C; stable for one year from the date of shipment.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.