SANTA CRUZ BIOTECHNOLOGY, INC.

eIF4AI/II (H-5): sc-377315

BACKGROUND

Translation initiation in eukaryotes necessitates the assembly of an 80S ribosomal complex. Eukaryotic initiation factors (eIFs) are utilized in a sequence of reactions that leads to 80S ribosomal assembly and initiation of translation. Mammalian eukaryotic translation initiation factor 4F (eIF4F) is a protein complex that contains eIF4A, eIF4E and eIF4G, binds mRNA at a 5'-cap motif and recruits the 43S ribosomal preinitiation complex to the eligible transcript. Along with eIF4B, the eIF4F complex mediates the unwinding of mRNA secondary structure to facilitate ribosome association. eIF4E specifically interacts with the 5' cap, eIF4A(I,II) are bidirectional RNA helicases, and eIF4G(I,II) are scaffolding proteins which coordinate eIF4E, eIF4A, eIF3 and the 40S ribosome. Human eIF4AI (eIF4A, DDX2A) is a 406 amino acid protein that is 92.7% homologous to mouse eIF4AI. The promoter region of human eIF4A1 contains TATA and CAAT motifs and consensus binding sites to Sp1 and AP2.

CHROMOSOMAL LOCATION

Genetic locus: EIF4A1 (human) mapping to 17p13.1, EIF4A2 (human) mapping to 3q27.3; Eif4a1 (mouse) mapping to 11 B3, Eif4a2 (mouse) mapping to 16 B1.

SOURCE

eIF4AI/II (H-5) is a mouse monoclonal antibody raised against amino acids 186-330 mapping within an internal region of eIF4AI 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.

eIF4AI/II (H-5) is available conjugated to agarose (sc-377315 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-377315 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377315 PE), fluorescein (sc-377315 FITC), Alexa Fluor® 488 (sc-377315 AF488), Alexa Fluor® 546 (sc-377315 AF546), Alexa Fluor® 594 (sc-377315 AF594) or Alexa Fluor® 647 (sc-377315 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377315 AF680) or Alexa Fluor® 790 (sc-377315 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

APPLICATIONS

eIF4AI/II (H-5) is recommended for detection of eIF4AI and eIF4AII of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

eIF4AI/II (H-5) is also recommended for detection of eIF4AI and eIF4AII in additional species, including equine, canine, bovine and porcine.

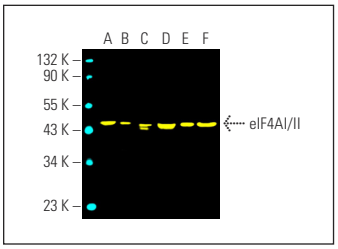
Molecular Weight of eIF4AI/II: 46 kDa.

Positive Controls: C2C12 whole cell lysate: sc-364188, NIH/3T3 whole cell lysate: sc-2210 or PC-12 cell lysate: sc-2250.

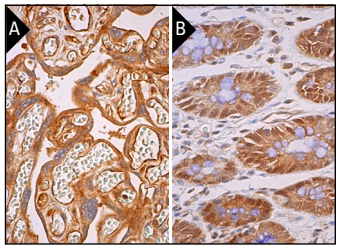
STORAGE

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

DATA



eIF4AI/II (H-5) Alexa Fluor® 488: sc-377315 AF488. Direct fluorescent western blot analysis of eIF4AI/II expression in Jurkat (**A**), A-431 (**B**), NIH/3T3 (**C**), C2C12 (**D**), PC-12 (**E**) and KNRK (**F**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker™ MW Tag-Alexa Fluor® 647: sc-516791.



eIF4AI/II (H-5): sc-377315. Immunoperoxidase staining of formalin fixed, paraffin-embedded human placenta tissue showing cytoplasmic staining of trophoblastic cells (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human rectum tissue showing cytoplasmic and nuclear staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Wang, J., et al. 2017. Snail determines the therapeutic response to mTOR kinase inhibitors by transcriptional repression of 4E-BP1. Nat. Commun. 8: 2207.
2. Youn, J.Y., et al. 2018. High-density proximity mapping reveals the subcellular organization of mRNA-associated granules and bodies. Mol. Cell 69: 517-532.e11.
3. Bouillier, C., et al. 2019. The interactome analysis of the respiratory syncytial virus protein M2-1 suggests a new role in viral mRNA metabolism post-transcription. Sci. Rep. 9: 15258.
4. Wang, M., et al. 2020. HSP70-eIF4G interaction promotes protein synthesis and cell proliferation in hepatocellular carcinoma. Cancers 12: 2262.
5. Chen, M., et al. 2021. Dual targeting of DDX3 and eIF4A by the translation inhibitor rocaglamide A. Cell Chem. Biol. 28: 475-486.e8.
6. Shen, S., et al. 2021. *In situ* detection of the eIF4F translation initiation complex in mammalian cells and tissues. STAR Protoc. 2: 100621.
7. Kayastha, F., et al. 2022. Novel eIF4A1 inhibitors with anti-tumor activity in lymphoma. Mol. Med. 28: 101.
8. Ha, D.P., et al. 2022. Targeting GRP78 suppresses oncogenic KRAS protein expression and reduces viability of cancer cells bearing various KRAS mutations. Neoplasia 33: 100837.
9. Wang, F., et al. 2023. METTL16 promotes translation and lung tumorigenesis by sequestering cytoplasmic eIF4E2. Cell Rep. 42: 112150.

RESEARCH USE

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