SANTA CRUZ BIOTECHNOLOGY, INC.

eRF1 (B-11): sc-365686

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Translation is carried out by the ribosome and several associated protein factors through three consecutive steps: initiation, elongation and termination. Termination of protein synthesis takes place when the ribosomal A site is occupied simultaneously by one of three stop codons and by a class 1 translation termination factor. In eukaryotes, this termination factor is the eukaryotic release factor 1 (eRF1), a protein that promotes hydrolysis of the last peptidyl-tRNA on the ribosome. eRF1 activity is stimulated by the association with the GTP-binding protein eRF3. eRF1 forms a quaternary complex with eRF3, GTP and the ribosome. This complex performs a dual role, where, in the "GTP state", it controls the positioning of eRF1 toward the stop codon and peptidyl-tRNA, and, in the "GDP state", it promotes the release of the eRFs from the ribosome. eRF1 contains a highly conserved Asn-Ile-Lys-Ser (NIKS) tetrapeptide, which is essential for the interaction of eRF1 with the ribosome. The gene encoding human eRF1 maps to chromosome 5q31.2.

REFERENCES

1. Frolova, L., et al. 1996. Eukaryotic polypeptide chain release factor eRF3 is an eRF1 and ribosome dependent guanosine triphosphatase. RNA 2: 334-341.
2. Le Goff, X., et al. 1997. Overexpression of human release factor 1 alone has an antisuppressor effect in human cells. Mol. Cell. Biol. 17: 3164-3172.

CHROMOSOMAL LOCATION

Genetic locus: ETF1 (human) mapping to 5q31.2; Etf1 (mouse) mapping to 18 B1.

SOURCE

eRF1 (B-11) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 411-437 at the C-terminus of eRF1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

eRF1 (B-11) is available conjugated to agarose (sc-365686 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365686 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365686 PE), fluorescein (sc-365686 FITC), Alexa Fluor® 488 (sc-365686 AF488), Alexa Fluor® 546 (sc-365686 AF546), Alexa Fluor® 594 (sc-365686 AF594) or Alexa Fluor® 647 (sc-365686 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365686 AF680) or Alexa Fluor® 790 (sc-365686 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-365686 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

APPLICATIONS

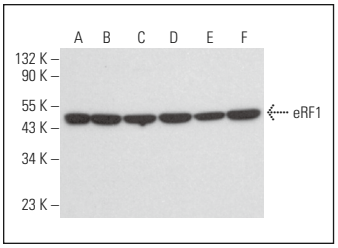
eRF1 (B-11) is recommended for detection of eRF1 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for eRF1 siRNA (h): sc-37871, eRF1 siRNA (m): sc-37872, eRF1 shRNA Plasmid (h): sc-37871-SH, eRF1 shRNA Plasmid (m): sc-37872-SH, eRF1 shRNA (h) Lentiviral Particles: sc-37871-V and eRF1 shRNA (m) Lentiviral Particles: sc-37872-V.

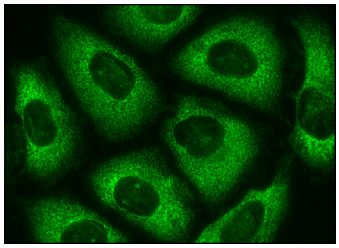
Molecular Weight of eRF1: 50 kDa.

Positive Controls: SK-BR-3 cell lysate: sc-2218, MDA-MB-231 cell lysate: sc-2232 or MCF7 whole cell lysate: sc-2206.

DATA



eRF1 (B-11): sc-365686. Western blot analysis of eRF1 expression in MCF7 (**A**), MDA-MB-231 (**B**), SK-BR-3 (**C**), MH-S (**D**), NTERA-2 cl.D1 (**E**) and COLO 205 (**F**) whole cell lysates.



eRF1 (B-11): sc-365686. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Ortega, J.A., et al. 2020. Nucleocytoplasmic proteomic analysis uncovers eRF1 and nonsense-mediated decay as modifiers of ALS/FTD C9orf72 toxicity. Neuron 106: 90-107.e13.
2. Sharma, J., et al. 2021. A small molecule that induces translational readthrough of CFTR nonsense mutations by eRF1 depletion. Nat. Commun. 12: 4358.
3. Oltion, K., et al. 2023. An E3 ligase network engages GCN1 to promote the degradation of translation factors on stalled ribosomes. Cell 186: 346-362.e17.
4. Müller, M.B.D., et al. 2023. Mechanisms of readthrough mitigation reveal principles of GCN1-mediated translational quality control. Cell 186: 3227-3244.e20.
5. Gurzeler, L.A., et al. 2023. Drug-induced eRF1 degradation promotes readthrough and reveals a new branch of ribosome quality control. Cell Rep. 42: 113056.

RESEARCH USE

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