SANTA CRUZ BIOTECHNOLOGY, INC.

RelA (5G8): sc-81622

BACKGROUND

During periods of amino acid starvation, bacteria, such as *Escherichia coli,* exhibit a global readjustment of metabolic activities (a process known as the stringent response) that, ultimately, ensures bacterial survival. The stringent response is specifically characterized by the rapid intracellular accumulation of guanosine 3',5'-bispyrophosphate (ppGpp), a signal molecule that inhibits RNA synthesis, thereby reducing the rate of translation and leading to an accumulation of amino acids within the cell. RelA is a ppGpp synthetase that is activated when amino acid levels are low and functions to catalyze the ATP-dependent synthesis of ppGpp. When amino acid levels are low, uncharged tRNA molecules enter the A site of the ribosome, an event that activates RelA function, thus promoting ppGpp synthesis and reducing the rate of translation. Once intracellular amino acid levels increase, RelA is hydrolyzed and the rate of ppGpp synthesis decreases, thereby allowing translation to resume.

REFERENCES

1. Metzger, S., et al. 1988. The nucleotide sequence and characterization of the relA gene of *Escherichia coli.* J. Biol. Chem. 263: 15699-15704.
2. Schreiber, G., et al. 1991. Overexpression of the relA gene in *Escherichia coli.* J. Biol. Chem. 266: 3760-3767.
3. Yang, X. and Ishiguro, E.E. 2001. Involvement of the N-terminus of ribosomal protein L11 in regulation of the RelA protein of *Escherichia coli.* J. Bacteriol. 183: 6532-6537.
4. Nakagawa, A., et al. 2006. Identification and characterization of a second, inducible promoter of RelA in *Escherichia coli.* Genes Genet. Syst. 81: 299-310.
5. Nakanishi, N., et al. 2006. ppGpp with DksA controls gene expression in the locus of enterocyte effacement (LEE) pathogenicity island of entero-haemorrhagic *Escherichia coli* through activation of two virulence regulatory genes. Mol. Microbiol. 61: 194-205.

SOURCE

RelA (5G8) is a mouse monoclonal antibody raised against full length recombinant RelA of *Escherichia coli* 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.

RelA (5G8) is available conjugated to agarose (sc-81622 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-81622 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-81622 PE), fluorescein (sc-81622 FITC), Alexa Fluor® 488 (sc-81622 AF488), Alexa Fluor® 546 (sc-81622 AF546), Alexa Fluor® 594 (sc-81622 AF594) or Alexa Fluor® 647 (sc-81622 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-81622 AF680) or Alexa Fluor® 790 (sc-81622 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF 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

RelA (5G8) is recommended for detection of RelA of *Escherichia coli* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000).

Molecular Weight of RelA: 84 kDa.

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.

SELECT PRODUCT CITATIONS

1. Gu, Y., et al. 2003. p47phox participates in activation of RelA in endothelial cells. J. Biol. Chem. 278: 17210-17217.
2. Urushibara, M., et al. 2004. The antirheumatic drug leflunomide inhibits osteoclastogenesis by interfering with receptor activator of NFκB ligand-stimulated induction of nuclear factor of activated T cells c1. Arthritis Rheum. 50: 794-804.
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4. Golovine, K., et al. 2008. Overexpression of the zinc uptake transporter hZIP1 inhibits nuclear factor-κB and reduces the malignant potential of prostate cancer cells *in vitro* and *in vivo.* Clin. Cancer Res. 14: 5376-5384.
5. Sanchez-Niño, M.D., et al. 2012. Beyond proteinuria: VDR activation reduces renal inflammation in experimental diabetic nephropathy. Am. J. Physiol. Renal Physiol. 302: F647-F657.
6. Ginzburg, S., et al. 2014. Piperlongumine inhibits NFκB activity and attenuates aggressive growth characteristics of prostate cancer cells. Prostate 74: 177-186.
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8. Li, S., et al. 2019. miRNA-302e attenuates inflammation in infantile pneumonia though the RelA/BRD4/NFκB signaling pathway. Int. J. Mol. Med. 44: 47-56.
9. Xiong, W., et al. 2022. USP8 inhibition reshapes an inflamed tumor microenvironment that potentiates the immunotherapy. Nat. Commun. 13: 1700.
10. Bartolomé, R.A., et al. 2023. Schnurri-3 drives tumor growth and invasion in cancer cells expressing interleukin-13 receptor α2. Cell Death Dis. 14: 742.

RESEARCH USE

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