

# Ran (h): 293 Lysate: sc-110522

## BACKGROUND

The small Ras-related protein Ran, also called TC4, is a nuclear localized GTPase implicated in a diverse array of cellular processes including DNA replication, entry into and exit from mitosis, and the transport of RNA and proteins through the nuclear pore complex. Like Ras, active Ran GTP and inactive Ran GDP levels are tightly regulated by guanine nucleotide exchange factors (GEFs) and GTPase activating proteins (GAPs). The abundant GEF, RCC1 (regulator of chromosome condensation 1), increases the rate at which Ran exchanges GDP for GTP. Ran GAP1 opposes the effects of RCC1 by increasing the rate at which Ran hydrolyzes GTP to GDP. A protein designated Ran BP-1 has no intrinsic GAP activity and functions as a GEF inhibitor deactivating RCC1, thereby indirectly increasing the ratio of Ran GDP to Ran GTP. The protein Ran BP-2 has been proposed as the Ran GTP docking site at the periphery of the nuclear pore complex.

## REFERENCES

1. Scheffzek, K., Klebe, C., Fritz-Wolf, K., Kabsch, W. and Wittinghofer, A. 1995. Crystal structure of the nuclear Ras-related protein Ran in its GDP-bound form. *Nature* 374: 378-381.
2. Beddow, A.L., Richards, S.A., Orem, N.R. and Macara, I.G. 1995. The Ran/TC4 GTPase-binding domain: identification by expression cloning and characterization of a conserved sequence motif. *Proc. Natl. Acad. Sci. USA* 92: 3328-3332.
3. Moroianu, J. and Blobel, G. 1995. Protein export from the nucleus requires the GTPase Ran and GTP hydrolysis. *Proc. Natl. Acad. Sci. USA* 92: 4318-4322.
4. Ren, M., Villamarin, A., Shih, A., Coutavas, E., Moore, M.S., LoCurcio, M., Clarke, V., Oppenheim, J.D., D'Eustachio, P. and Rush, M.G. 1995. Separate domains of the Ran GTPase interact with different factors to regulate nuclear protein import and RNA processing. *Mol. Cell. Biol.* 15: 2117-2124.
5. Bischoff, F.R., Krebber, H., Smirnova, E., Dong, W. and Ponstingl, H. 1995. Co-activation of Ran GTPase and inhibition of GTP dissociation by Ran-GTP binding protein Ran BP-1. *EMBO J.* 14: 705-715.
6. Klebe, C., Bischoff, F.R., Ponstingl, H. and Wittinghofer, A. 1995. Interaction of the nuclear GTP-binding protein Ran with its regulatory proteins RCC1 and Ran GAP1. *Biochemistry* 34: 639-647.
7. Melchior, F., Guan, T., Yokoyama, N., Nishimoto, T. and Gerace, L. 1995. GTP hydrolysis by Ran occurs at the nuclear pore complex in an early step of protein import. *J. Cell Biol.* 131: 571-581.
8. Hieda, M., Tachibana, T., Yokoya, F., Kose, S., Imamoto, N. and Yoneda, Y. 1999. A monoclonal antibody to the COOH-terminal acidic portion of Ran inhibits both the recycling of Ran and nuclear protein import in living cells. *J. Cell Biol.* 144: 645-655.
9. Perez-Terzic, C., Gacy, A.M., Bortolon, R., Dzeja, P.P., Puceat, M., Jaconi, M., Prendergast, F.G. and Terzic, A. 2001. Directed inhibition of nuclear import in cellular hypertrophy. *J. Biol. Chem.* 276: 20566-20571.

## CHROMOSOMAL LOCATION

Genetic locus: RAN (human) mapping to 12q24.33.

## PRODUCT

Ran (h): 293 Lysate represents a lysate of human Ran transfected 293 cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

## APPLICATIONS

Ran (h): 293 Lysate is suitable as a Western Blotting positive control for human reactive Ran antibodies. Recommended use: 10-20 µl per lane.

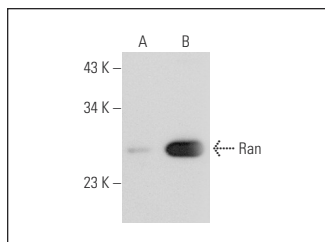
Control 293 Lysate: sc-110760 is available as a Western Blotting negative control lysate derived from non-transfected 293 cells.

Ran (ARAN1): sc-58467 is recommended as a positive control antibody for Western Blot analysis of enhanced human Ran expression in Ran transfected 293 cells (starting dilution 1:100, dilution range 1:100-1:1,000).

## 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.

## DATA



Ran (ARAN1): sc-58467. Western blot analysis of Ran expression in non-transfected: sc-110760 (A) and human Ran transfected: sc-110522 (B) 293 whole cell lysates.

## STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.