SANTA CRUZ BIOTECHNOLOGY, INC.

GRB2 (156-199): sc-4036

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The Power to Question

BACKGROUND

The superfamily of GTP binding proteins, of which Ras proteins are prototypes, has been implicated in a broad range of biological activities. A family of guanine nucleotide releasing factors (GRFs) activate Ras in mammalian cells and growth factor receptor-bound protein 2 (GRB2), an adaptor protein (also referred to as Sem 5) that appears to mediate the interaction of GRFs with activated receptor molecules. GRB2 forms a complex with activated EGFR (epidermal growth factor receptor) and the Ras-specific guanine nucleoide exchange factor Sos 1, and, together, they regulate the growth factor-induced activation of Ras. GRB2 exhibits both structural and functional homology to the *C. elegans* protein Sem 5. GRB2 is necessary during embryogenesis for the differentiation of endodermal cells and formation of the epiblast.

REFERENCES

1. Lowenstein, E.J., et al. 1992. The SH2 and SH3 domain-containing protein GRB2 links receptor tyrosine kinases to Ras signaling. Cell 40: 431-442.
2. Chardin, P., et al. 1993. Human Sos 1: A guanine nucleotide exhange factor for Ras that binds to GRB2. Science 260: 1338-1343.
3. Skolnik, E.Y., et al. 1993. The function of GRB2 in linking the Insulin receptor to Ras signaling pathways. Science 260: 1953-1955.
4. Simon, M.A., et al. 1993. An SH3-SH2-SH3 protein is required for p21 Ras 1 activation and binds to sevenless and Sos proteins *in vitro*. Cell 73: 169-177.
5. Buday, L. and Downward, J. 1993. Epidermal growth factor regulates p21 Ras through the formation of a complex of receptor, GRB2 adaptor protein, and Sos nucleotide exchange factor. Cell 73: 611-620.
6. Egan, S.E., et al. 1993. Association of Sos Ras exchange protein with GRB2 is implicated in tyrosine kinase signal transduction and transformation. Nature 363: 45-51.
7. Zhang, X., et al. 1993. Normal and oncogenic p21 Ras proteins bind to the amino-terminal regulatory domain of c-Raf-1. Nature 364: 308-313.

CHROMOSOMAL LOCATION

Genetic locus: GRB2 (human) mapping to 17q25.1; Grb2 (mouse) mapping to 11 E2.

SOURCE

GRB2 (156-199) is expressed in *E. coli* as a 33 kDa tagged fusion protein corresponding to amino acids 156-199 of GRB2 of mouse origin containing the carboxy-terminal SH3 domain.

STORAGE

Store GRB2 (156-199): sc-4036 at -20° C and GRB2 (156-199) AC: sc-4036 AC at 4° C; stable for one year from the date of shipment.

PROTOCOLS

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

PRODUCT

GRB2 (156-199) is purified from bacterial lysates (> 98%) by glutathione agarose chromatography and supplied as 50 µg purified protein in PBS with 5 mM DTT and 50% glycerol.

Also available in agarose conjugate format; 100 µg purified GRB2 (156-199) protein conjugated to 0.1 ml agarose in PBS containing 0.1% azide, 0.1% BSA and 10% glycerol (50% slurry of agarose beads by volume): GRB2 (156-199) AC: sc-4036 AC.

APPLICATIONS

GRB2 (156-199) in its soluble, non-conjugated form (sc-4036) is recommended for purification of target proteins containing appropriate proline-rich sequences when used in combination with glutathione agarose (sc-2009).

Alternatively, the agarose conjugated form of this product (sc-4036 AC) can be used directly for target protein binding.

Molecular Weight of GRB2: 25-31 kDa.

SELECT PRODUCT CITATIONS

1. Saleem, A., et al. 1995. Monocyte colony-stimulating factor stimulates binding of phosphatidylinositol 3-kinase to Grb2.Sos complexes in human monocytes. J. Biol. Chem. 270: 10380-10383.
2. Sadoshima, J., et al. 1996. The heterotrimeric G_q protein-coupled Angiotensin II receptor activates p21 Ras via the tyrosine kinase-Shc-Grb2-Sos pathway in cardiac myocytes. EMBO J. 15: 775-787.
3. Nelson, J.W., et al. 1996. ATP and SH3 binding sites in the protein kinase of the large subunit of herpes simplex virus type 2 of ribonucleotide reductase (ICP10). J. Biol. Chem. 271: 17021-17027.
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5. Yaqub, S., et al. 2003. Activation of C-terminal Src kinase (Csk) by phosphorylation at serine-364 depends on the Csk-Src homology 3 domain. Biochem J. 372: 271-278.
6. Zhou, D., et al. 2004. A novel crosstalk mechanism between nuclear receptor-mediated and growth factor/Ras-mediated pathways through PNRC-Grb2 interaction. Oncogene 23: 5394-5404.

RESEARCH USE

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