SANTA CRUZ BIOTECHNOLOGY, INC.

GRB2 (1-217): sc-4015

SANTA CRUZ BIOTECHNOLOGY

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 nucleotide exchange factor SOS1, 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., Daly, R.J., Batzer, A.G., Li, W., Margolis, B., Lammers, R., Ullrich, A., Skolnik, E.Y., Bar-Sagi, D. and Schlessinger, J. 1992. The SH2 and SH3 domain-containing protein GRB2 links receptor tyrosine kinases to Ras signaling. Cell 40: 431-442.
2. Chardin, P., Camonis, J.H., Gale, N.W., Van Aelst, L., Schlessinger, J., Wigler, M.H. and Bar-Sagi, D. 1993. Human Sos 1: A guanine nucleotide exchange factor for Ras that binds to GRB2. Science 260: 1338-1343.
3. Skolnik, E.Y., Batzer, A., Li, N., Lee, C.H., Lowenstein, E., Mohammadi, M., Margolis, B. and Schlessinger, J. 1993. The function of GRB2 in linking the Insulin receptor to Ras signaling pathways. Science 260: 1953-1955.
4. Simon, M.A., Dodsen, G.S. and Rubin, G.M. 1993. An SH3-SH2-SH3 is required for p21Ras1 activation and binds to sevenless and Sos proteins *in vitro*. Cell 73: 169-177.
5. Egan, S.E., Giddings, B.W., Brooks, M.W., Buday, L., Sizeland, A.M. and Weinburg, R.A. 1993. Association of Sos Ras exchange protein with GRB2 is implicated in tyrosine kinase signal transduction and transformation. Nature 363: 45-51.
6. 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.

CHROMOSOMAL LOCATION

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

SOURCE

GRB2 (1-217) is expressed in *E. coli* as a 50 kDa tagged fusion protein corresponding to amino acids 1-217 representing the full length GRB2 protein of mouse origin.

STORAGE

Store GRB2 (1-217): sc-4015 at -20° C and store GRB2 (1-217): sc-4015 AC at 4° C. Stable for one year from the date of shipment.

PRODUCT

GRB2 (1-217) is purified from bacterial lysates (> 98%) by glutathione agarose chromatography and supplied as 50 µg purified protein in PBS containing 5 mM DTT and 50% glycerol.

Also available in agarose conjugate form; 100 µg purified GRB2 (1-217) 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 (1-217) AC: sc-4015 AC.

APPLICATIONS

GRB2 (1-217) is recommended for the enrichment of GRB2 associated proteins when used in combination with glutathione agarose (sc-2009).

Molecular Weight of GRB2: 25-31 kDa.

SELECT PRODUCT CITATIONS

1. Tauchi, T., Feng, G.S., Shen, R., Hoatlin, M., Bagby, G.C., Jr., Kabat, D., Lu, L. and Broxmeyer, H.E. 1995. Involvement of SH2-containing phosphotyrosine phosphatase SYP in erythropoietin receptor signal transduction pathways. J. Biol. Chem. 270: 5631-5635.
2. Saleem, A., Kharbanda, S., Yuan, Z.M. and Kufe, D. 1995. Monocyte colony-stimulating factor stimulates binding of phosphatidylinositol 3-kinase to GRB2.Sos complexes in human monocytes. J. Biol. Chem. 270: 10380-10383.
3. Weyrich, A.S., Dixon, D.A., Pabla, R., Elstad, M.R., McIntyre, T.M., Prescott, S.M. and Zimmerman, G.A. 1998. Signal-dependent translation of a regulatory protein, Bcl-3, in activated human platelets. Proc. Natl. Acad. Sci. USA 95: 5556-5561.
4. Zhou, D., Zhou, D., Chen, B., Ye, J.J. and Chen, S. 2004. A novel crosstalk mechanism between nuclear receptor-mediated and growth factor/Ras-mediated pathways through PNRC-Grb2 interaction. Oncogene 23: 5394-5404.
5. Ozaki, K., Miyazaki, S., Tanimura, S. and Kohno, M. 2005. Efficient suppression of FGF-2-induced ERK activation by the cooperative interaction among mammalian Sprouty isoforms. J. Cell Sci. 118: 5961-5871.
6. Martin, M., Del Valle, J.M., Saborit, I. and Engel, P. 2005. Identification of Grb2 as a novel binding partner of the signaling lymphocytic activation molecule-associated protein binding receptor CD229. J. Immunol. 174: 5977-5986.
7. Luzy, J.P., Chen, H., Gril, B., Liu, W.Q., Vidal, M., Perdereau, D., Burnol, A.F. and Garbay, C. 2008. Development of binding assays for the SH2 domain of Grb7 and Grb2 using fluorescence polarization. J. Biomol. Screen. 13: 112-119.

RESEARCH USE

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