SANTA CRUZ BIOTECHNOLOGY, INC.

p-IRS-1 (Tyr 989): sc-17200

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Insulin receptor substrate-1 (IRS-1) is a substrate of the Insulin receptor that undergoes phosphorylation in response to Insulin, IGF-1 and IL-4. Tyrosine (Tyr) phosphorylation of IRS-1 mediates Insulin-stimulated responses, while Serine (Ser)/Threonine (Thr) phosphorylation of IRS-1 can either enhance or negate Insulin effects. Tyrosines 465, 612, 632, 662, 941 and 989 of IRS-1 resemble YXXM motifs that upon phosphorylation are predicted to bind SH2 domains in the p85 regulatory subunit of PI3K, resulting in activation of p110 catalytic subunit. SHP-2 binding to IRS-1 can occur upon phosphorylation at Tyr 1179 and Tyr 1229. GRB2 binding can occur upon phsophorylation at Tyr 896. Rodent Ser 99 and Thr 502 of IRS-1 are casein kinase II-dependent phosphorylation sites. There is an increase in Ser 636 phosphorylation of IRS-1 in primary skeletal muscle cells from patients with type 2 diabetes. IGF-I and anisomycin treatment converge downstream onto FRAP and PKC δ to induce IRS-1 Ser 312 phosphorylation. Insulin resistance in the aorta of hypertensive rats is associated with elevated IRS-1 phosphorylation at Ser 307 and increased SAPK/JNK activation. IRS-1 contains three putative binding sites for 14-3-3 protein at Ser 270, Ser 374 and Ser 641 that are capable of phosphorylation.

CHROMOSOMAL LOCATION

Genetic locus: IRS1 (human) mapping to 2q36.3; Irs1 (mouse) mapping to 1 C5.

SOURCE

p-IRS-1 (Tyr 989) is available as either goat (sc-17200) or rabbit (sc-17200-R) polyclonal affinity purified antibody raised against a short amino acid sequence containing Tyr 989 phosphorylated IRS-1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-17200 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-IRS-1 (Tyr 989) is recommended for detection of Tyr 989 phosphorylated IRS-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, 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 IRS-1 siRNA (h): sc-29376, IRS-1 siRNA (m): sc-29377, IRS-1 shRNA Plasmid (h): sc-29376-SH, IRS-1 shRNA Plasmid (m): sc-29377-SH, IRS-1 shRNA (h) Lentiviral Particles: sc-29376-V and IRS-1 shRNA (m) Lentiviral Particles: sc-29377-V.

Molecular Weight of p-IRS-1: 170-185 kDa.

Positive Controls: MCF7 + Insulin cell lysate: sc-24733, NIH/3T3 whole cell lysate: sc-2210 or A549 cell lysate: sc-2413.

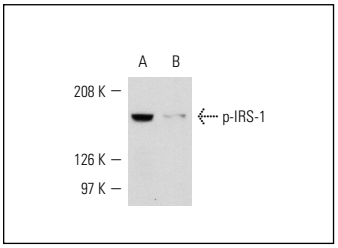
RESEARCH USE

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

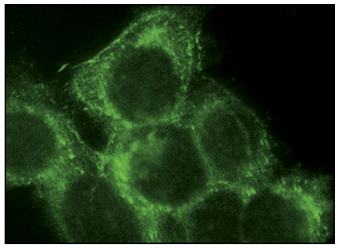
STORAGE

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

DATA



p-IRS-1 (Tyr 989)-R: sc-17200-R. Western blot analysis of IRS-1 phosphorylation expression in Insulin treated (**A**) and untreated (**B**) MCF-7 cultures.



p-IRS-1 (Tyr 989)-R: sc-17200-R. Immunofluorescence staining of methanol-fixed MCF7 cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Smeets, R.L., et al. 2006. A novel role for suppressor of cytokine signaling 3 in cartilage destruction via induction of chondrocyte desensitization toward insulin-like growth factor. Arthritis Rheum. 54: 1518-1528.
2. Jung, S.H., et al. 2007. Insulin-mimetic and insulin-sensitizing activities of a pentacyclic triterpenoid insulin receptor activator. Biochem. J. 403: 243-250.
3. Moore, T., et al. 2008. Reduced susceptibility to two-stage skin carcinogenesis in mice with low circulating insulin-like growth factor I levels. Cancer Res. 68: 3680-3688.
4. Penna, F., et al. 2009. Muscle atrophy in experimental cancer cachexia: is the IGF-1 signaling pathway involved? Int. J. Cancer 127: 1706-1717.
5. Sabbatini, P., et al. 2009. Antitumor activity of GSK1904529A, a small-molecule inhibitor of the insulin-like growth factor-I receptor tyrosine kinase. Clin. Cancer Res. 15: 3058-3067.
6. Sabbatini, P., et al. 2009. GSK1838705A inhibits the insulin-like growth factor-1 receptor and anaplastic lymphoma kinase and shows antitumor activity in experimental models of human cancers. Mol. Cancer Ther. 8: 2811-2820.
7. Krishnapuram, R., et al. 2011. A template to improve glycemic control without reducing adiposity or dietary fat. Am. J. Physiol. Endocrinol. Metab. 300: E779-E789.
8. Folli, F., et al. 2011. Altered insulin receptor signalling and β-cell cycle dynamics in type 2 diabetes mellitus. PLoS ONE 6: e28050.
9. Oliveira, V., et al. 2015. Diets containing α-linolenic (ω3) or oleic (ω9) fatty acids rescues obese mice from insulin resistance. Endocrinology 156: 4033-4046.

PROTOCOLS

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