SANTA CRUZ BIOTECHNOLOGY, INC.

p-IRS-1 (Ser 639): sc-101712

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-I 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 PI 3-K, 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 phosphorylation 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.

REFERENCES

1. Ogihara, T., et al. 1997. 14-3-3 protein binds to Insulin receptor substrate-1, one of the binding sites of which is in the phosphotyrosine binding domain. J. Biol. Chem. 272: 25267-25274.
2. Esposito, D.L., et al. 2001. Tyr 612 and Tyr 632 in human Insulin receptor substrate-1 are important for full activation of Insulin-stimulated phosphatidylinositol 3-kinase activity and translocation of Glut4 in adipose cells. Endocrinology 142: 2833-2840.

CHROMOSOMAL LOCATION

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

SOURCE

p-IRS-1 (Ser 639) is a rabbit polyclonal antibody raised against a short amino acid sequence containing Ser 639 phosphorylated IRS-1 of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. 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 or our catalog for detailed protocols and support products.

APPLICATIONS

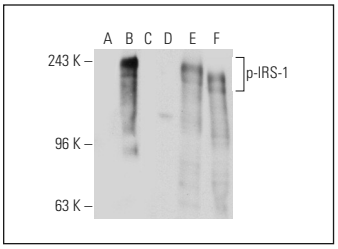
p-IRS-1 (Ser 639) is recommended for detection of Ser 639 phosphorylated IRS-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

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.

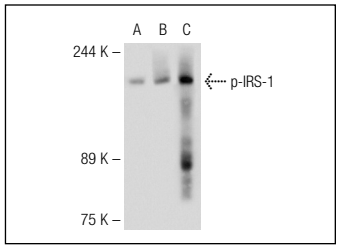
Molecular Weight of p-IRS-1: 170-185 kDa.

Positive Controls: IRS-1 (h3): 293T Lysate: sc-177402, MCF7 + Insulin cell lysate: sc-24733 or A549 cell lysate: sc-2413.

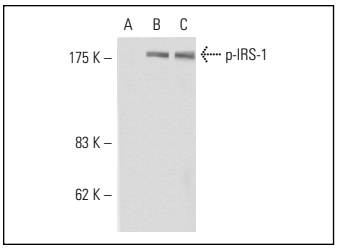
DATA



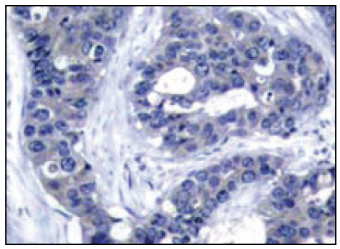
Western blot analysis of IRS-1 phosphorylation in non-transfected: sc-117752 (**A**,**D**), untreated human IRS-1 transfected: sc-116569 (**B**,**E**) and lambda protein phosphatase treated human IRS-1 transfected: sc-116569 (**C**,**F**) 293T whole cell lysates. Antibodies tested include p-IRS-1 (Ser 639): sc-101712 (**A**,**B**,**C**) and IRS-1 (A-19): sc-560 (**D**,**E**,**F**).



p-IRS-1 (Ser 639): sc-101712. Western blot analysis of IRS-1 phosphorylation in non-transfected 293T: sc-117752 (**A**), human IRS-1 transfected 293T: sc-177402 (**B**) and A-549 (**C**) whole cell lysates.



p-IRS-1 (Ser 639): sc-101712. Western blot analysis of phosphorylated IRS-1 expression in untreated (**A**), Insulin-treated (**B**) and PMA-treated (**C**) 293 whole cell lysates.



p-IRS-1 (Ser 639): sc-101712. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human breast carcinoma tissue showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Simó, R., et al. 2012. Potential role of tumor necrosis factor-α in down-regulating sex hormone-binding globulin. Diabetes 61: 372-382.