

#2580 Store at -20°C

# Phospho-IRS-1 (Ser332/336) Antibody



**Orders** ■ 877-616-CELL (2355)  
orders@cellsignal.com  
**Support** ■ 877-678-TECH (8324)  
info@cellsignal.com  
**Web** ■ www.cellsignal.com

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**For Research Use Only. Not For Use In Diagnostic Procedures.**

| Applications<br>W<br>Transfected | Species Cross-Reactivity*<br>R, (H, M) | Molecular Wt.<br>180 kDa | Source<br>Rabbit** |
|----------------------------------|--|--------------------------|--------------------|
|----------------------------------|--|--------------------------|--------------------|

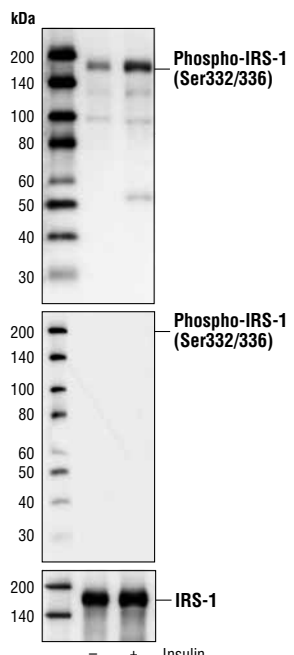
**Background:** Insulin receptor substrate 1 (IRS-1) is one of the major substrates of the insulin receptor kinase (1). IRS-1 contains multiple tyrosine phosphorylation motifs that serve as docking sites for SH2 domain containing proteins that mediate the metabolic and growth promoting functions of insulin (2-4). IRS-1 also contains over 30 potential serine/threonine phosphorylation sites. Ser307 of IRS-1 is phosphorylated by JNK (5) and IKK (6) while Ser789 is phosphorylated by SIK-2, a member of the AMPK family (7). The PKC and mTOR pathways mediate phosphorylation of IRS-1 at Ser612 and Ser636/639, respectively (8,9). Phosphorylation of IRS-1 at Ser1101 is mediated by PKC $\theta$  and results in an inhibition of insulin signaling in the cell, suggesting a potential mechanism for insulin resistance in some models of obesity (10).

GSK-3-mediated IRS-1 serine phosphorylation leads to inhibition of insulin-stimulated IRS-1 signaling. Ser332 and Ser336 of IRS-1 are situated in a glycogen synthase kinase-3 (GSK-3) consensus motif (SXXXS), and it has been shown that Ser332 is the actual GSK-3 phosphorylation site while Ser336 provides a "priming" site necessary for GSK-3 action (11).

**Specificity/Sensitivity:** Phospho-IRS-1 (Ser332/336) Antibody detects transfected levels of IRS-1 when phosphorylated at Ser332/336. It also detects IRS-1 protein when singly phosphorylated at Ser332 or Ser336 of human IRS-1. This antibody does not cross-react with other related phosphoproteins.

**Source/Purification:** Polyclonal antibodies are produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser332/336 of mouse IRS-1 (equivalent to Ser337/341 of human IRS-1). Antibodies are purified by peptide affinity chromatography.

- Background References:**
- (1) Sun, X.J. et al. (1991) *Nature* 352, 73-77.
  - (2) Sun, X.J. et al. (1992) *J. Biol. Chem.* 267, 22662-22672.
  - (3) Myers Jr., M.G. et al. (1993) *Endocrinology* 132, 1421-1430.
  - (4) Wang, L.M. et al. (1993) *Science* 261, 1591-1594.
  - (5) Rui, L. et al. (1997) *J. Clin. Invest.* 107, 181-189.
  - (6) Gao, Z. et al. (2002) *J. Biol. Chem.* 277, 48115-48121.
  - (7) Horike, N. et al. (2003) *J. Biol. Chem.* 278, 18440-18447.
  - (8) Ozes, O.N. et al. (2001) *Proc. Natl. Acad. Sci. USA* 98, 4640-4645.
  - (9) De Fea, K. and Ruth, R.A. (1997) *Biochemistry* 36, 12939-12947.
  - (10) Li, Y. et al. (2004) *J. Biol. Chem.* 279, 45304-45307.
  - (11) Liberman, Z. and Eldar-Finkelman, H. (2005) *J. Biol. Chem.* 280, 4422-4428.



Western blot analysis of cell extracts from CHO cells overexpressing insulin receptor and IRS-1, untreated or treated with insulin, using Phospho-IRS-1 (Ser332/336) Antibody (upper and middle) or IRS-1 Antibody #2382 (lower). The middle blot was treated with calf intestinal phosphatase (CIP) before antibody probing.

Entrez-Gene ID #3667  
Swiss-Prot Acc. #P35568

**Storage:** Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at -20°C. Do not aliquot the antibody.

**\*Species cross-reactivity is determined by western blot.**

**\*\*Anti-rabbit secondary antibodies must be used to detect this antibody.**

**Recommended Antibody Dilutions:**  
Western blotting 1:1000

**For application specific protocols please see the web page for this product at www.cellsignal.com.**

**Please visit www.cellsignal.com for a complete listing of recommended companion products.**

**IMPORTANT: For western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.**

**Applications Key:** W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide  
**Species Cross-Reactivity Key:** H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebrafish B—bovine  
 Dg—dog Pg—pig Sc—S. cerevisiae Ce—C. elegans Hr—horse All—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.