

#4821 Store at -20°C

# Akt (pan) (40D4) Mouse mAb (Biotinylated)



✓ 100 µl  
(10 western blots)

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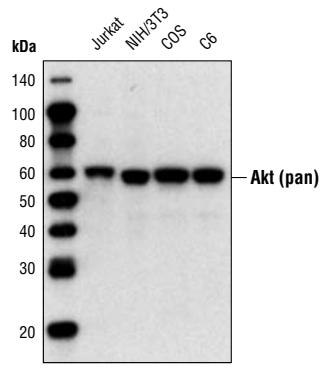
rev. 03/04/10

This product is intended for research purposes only. This product is not intended to be used for therapeutic or diagnostic purposes in humans or animals.

Applications	Species Cross-Reactivity	Molecular Wt.	Isotype
W, IP, F Endogenous	H, M, R, Mk	60 kDa	Mouse IgG1k

**Description:** This Cell Signaling Technology (CST) antibody is conjugated to biotin under optimal conditions. The antibody exhibits the same species cross-reactivity as the unconjugated Akt (pan) (40D4) Mouse mAb #2920.

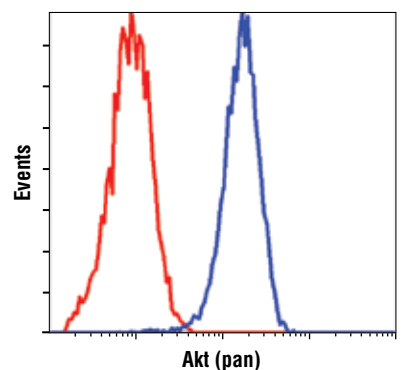
**Background:** Akt, also referred to as PKB or Rac, plays a critical role in controlling survival and apoptosis (1-3). This protein kinase is activated by insulin and various growth and survival factors to function in a wortmannin-sensitive pathway involving PI3 kinase (2,3). Akt is activated by phospholipid binding and activation loop phosphorylation at Thr308 by PDK1 (4) and by phosphorylation within the carboxy terminus at Ser473. The previously elusive PDK2 responsible for phosphorylation of Akt at Ser473 has been identified as mammalian target of rapamycin (mTor) in a rapamycin-insensitive complex with rictor and Sin1 (5,6). Akt promotes cell survival by inhibiting apoptosis by phosphorylating and inactivating several targets, including Bad (7), forkhead transcription factors (8), c-Raf (9) and caspase-9. PTEN phosphatase is a major negative regulator of the PI3 kinase/Akt signaling pathway (10). LY294002 is a specific PI3 kinase inhibitor (11). Another essential Akt function is the regulation of glycogen synthesis through phosphorylation and inactivation of GSK-3 $\alpha$  and  $\beta$  (12,13). Akt may also play a role in insulin stimulation of glucose transport (12). In addition to its role in survival and glycogen synthesis, Akt is involved in cell cycle regulation by preventing GSK-3 $\beta$  mediated phosphorylation and degradation of cyclin D1 (14) and by negatively regulating the cyclin dependent kinase inhibitors p27 Kip (15) and p21 Waf1/CIP1 (16). Akt also plays a critical role in cell growth by directly phosphorylating mTOR in a rapamycin-sensitive complex containing raptor (17). More importantly, Akt phosphorylates and inactivates tuberlin (TSC2), an inhibitor of mTOR within the mTOR-raptor complex (18). Inhibition of mTOR stops the protein synthesis machinery by inactivating p70 S6 kinase and activating the eukaryotic initiation factor 4E binding protein 1 (4E-BP1), an inhibitor of translation (18,19).



Western blot analysis of extracts from various cell lines using Akt (pan) (40D4) Mouse mAb (Biotinylated).

**Specificity/Sensitivity:** Akt (pan) (40D4) Mouse mAb (Biotinylated) detects endogenous levels of total Akt protein. This antibody does not cross-react with other related proteins.

**Source/Purification:** Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues in the carboxy-terminal sequence of human Akt protein.



Flow cytometric analysis of Jurkat cells using Akt (pan) (40D4) Mouse mAb (Biotinylated) (blue) compared to Mouse (MOPC-21) mAb IgG1 Isotype Control (Biotinylated) #4097 (red).

Entrez-Gene ID #207  
Swiss-Prot Acc. #P31749

**Storage:** Supplied in 136 mM NaCl, 2.6 mM KCl, 12 mM sodium phosphate (pH 7.4) dibasic, 2 mg/ml BSA, and 50% glycerol. Store at -20°C. Do not aliquot antibody.

**Biotinylated antibodies are designed to be detected using streptavidin conjugates.**

**Recommended Antibody Dilutions:**  
Western blotting 1:1000  
Immunoprecipitation 1:50  
Flow Cytometry 1:100

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

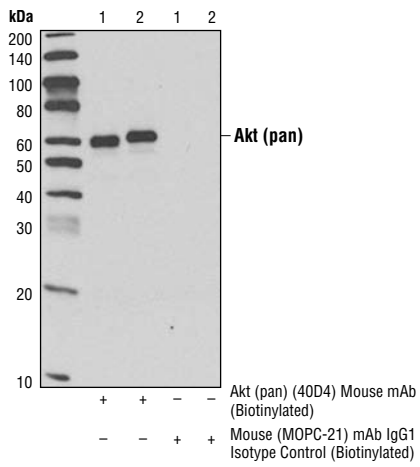
**Please visit www.cellsignal.com for a complete listing of recommended companion products.**

**Background References:**

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**IMPORTANT: For western blots, incubate membrane with diluted antibody in 5% w/v nonfat dry milk, 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.



*Immunoprecipitation of extracts from Jurkat cells treated with either LY294002 #9901 (1) or Calyculin A #9902 (2) using Akt (pan) (40D4) Mouse mAb (Biotinylated) and Mouse (MOPC-21) mAb IgG1 Isotype Control (Biotinylated) #4097. Immunocomplexes were pulled down using Immobilized Streptavidin (Bead Conjugate) #3419. Western blot analysis was performed using Akt (pan) (C67E7) Rabbit mAb #4691.*