

# Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (PE Conjugate)



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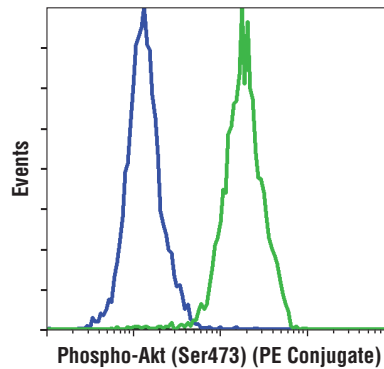
Applications	Species Cross-Reactivity*	Isotype
F Endogenous	H, M, R, Hm, Mk, Dm, Z, B, (X, Dg, Pg, C)	Rabbit IgG**

**Description:** This Cell Signaling Technology antibody is conjugated to phycoerythrin (PE) and tested in-house for direct flow cytometry analysis in human cells. The antibody is expected to exhibit the same species cross-reactivity as the unconjugated Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb #4060.

**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 through phosphorylation and inactivation of 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).

**Specificity/Sensitivity:** Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (PE Conjugate) detects endogenous levels of Akt only when phosphorylated at Ser473.

**Source/Purification:** Monoclonal antibody is produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser473 of human Akt.



Flow cytometric analysis of Jurkat cells, untreated (green) or treated with LY294002 (PI3 Kinase Inhibitor) #9901, Wortmannin (PI3 Kinase Inhibitor) #9551 and U0126 (MEK1/2 Inhibitor) #9903 (blue), using Phospho-Akt (Ser473) (D9E) XP® Rabbit mAb (PE Conjugate).

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

**Storage:** Supplied in PBS (pH 7.2), less than 0.1% sodium azide and 2mg/ml BSA. Store at 4°C. Protect from light. Do not freeze.

**\*Species cross-reactivity other than human is determined by western blot using the unconjugated antibody.**

**Recommended Antibody Dilutions:**

Flow Cytometry 1:50

**For application specific protocols please see the web page for this product at [www.cellsignal.com](http://www.cellsignal.com).**

**Please visit [www.cellsignal.com](http://www.cellsignal.com) for a complete listing of recommended companion products.**

**Background References:**

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