

#2920 Store at -20°C

Akt (pan) (40D4) Mouse mAb



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Applications: WB, IP, IHC-P	Reactivity: H M R Mk	Sensitivity: Endogenous	MW (kDa): 60	Source/Isotype: Mouse IgG1	UniProt ID: #P31751, #Q9Y243, #P31749	Entrez-Gene Id: 208, 10000, 207
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Product Usage Information	Application Western Blotting Immunoprecipitation Immunohistochemistry (Paraffin)	Dilution 1:2000 1:50 1:250
Storage	Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody. For a carrier free (BSA and azide free) version of this product see product #28544.	
Specificity / Sensitivity	Akt (pan) (40D4) Mouse mAb 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 at the carboxy-terminal sequence of human Akt.	
Background	Akt, also referred to as PKB or Rac, plays a critical role in controlling cell 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 PI3K/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-3α and β (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-3β-mediated phosphorylation and degradation of cyclin D1 (14) and by negatively regulating the cyclin-dependent kinase inhibitors p27 Kip1 (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 (18,19).	

Background References	1. Franke, T.F. et al. (1997) <i>Cell</i> 88, 435-7. 2. Burgering, B.M. and Coffey, P.J. (1995) <i>Nature</i> 376, 599-602. 3. Franke, T.F. et al. (1995) <i>Cell</i> 81, 727-36. 4. Alessi, D.R. et al. (1996) <i>EMBO J</i> 15, 6541-51. 5. Sarbassov, D.D. et al. (2005) <i>Science</i> 307, 1098-101. 6. Jacinto, E. et al. (2006) <i>Cell</i> 127, 125-37. 7. Cardone, M.H. et al. (1998) <i>Science</i> 282, 1318-21. 8. Brunet, A. et al. (1999) <i>Cell</i> 96, 857-68. 9. Zimmermann, S. and Moelling, K. (1999) <i>Science</i> 286, 1741-4. 10. Cantley, L.C. and Neel, B.G. (1999) <i>Proc Natl Acad Sci USA</i> 96, 4240-5. 11. Vlahos, C.J. et al. (1994) <i>J Biol Chem</i> 269, 5241-8. 12. Hajduch, E. et al. (2001) <i>FEBS Lett</i> 492, 199-203. 13. Cross, D.A. et al. (1995) <i>Nature</i> 378, 785-9. 14. Diehl, J.A. et al. (1998) <i>Genes Dev</i> 12, 3499-511. 15. Gesbert, F. et al. (2000) <i>J Biol Chem</i> 275, 39223-30. 16. Zhou, B.P. et al. (2001) <i>Nat Cell Biol</i> 3, 245-52. 17. Navé, B.T. et al. (1999) <i>Biochem J</i> 344 Pt 2, 427-31.
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18. Inoki, K. et al. (2002) *Nat Cell Biol* 4, 648-57.19. Manning, B.D. et al. (2002) *Mol Cell* 10, 151-62.**Species Reactivity**

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key**WB:** Western Blotting **IP:** Immunoprecipitation **IHC-P:** Immunohistochemistry (Paraffin)**Cross-Reactivity Key****H:** human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **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 **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected**Trademarks and Patents**

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