Mouse (monoclonal) Anti-PI3-Kinase p85β Subunit

PRODUCT ANALYSIS SHEET

Catalog Number: AHO0572

Lot Number: See product label

Quantity: 2 mL

Clone Number: T15

Isotype: IgG1 (mouse)

Form of the Antibody: Tissue culture supernatant.

Preservation: 0.02% sodium azide (Caution: sodium azide is a poisonous and hazardous substance. Handle with care and dispose of properly.)

Immunogen: Recombinant bovine p85β subunit of PI3-kinase, expressed in baculovirus.

Myeloma/Fusion Partners: Immunized mouse splenocytes were fused with NS1 mouse myeloma cells.

Specificity: Phosphoinositide 3-kinase (PI3-kinase, PI3K) catalyzes the addition of a phosphate group to the 3' hydroxyl group of phosphatidylinositol, yielding PI 3,4 bisphosphate (PIP_2) and PI 3,4,5 trisphosphate (PIP_3). PIP_3 serves to localize proteins containing a Pleckstrin homology (PH) domain, a feature present in many classes of signaling proteins (serine/threonine kinases, tyrosine kinases, GTPase activating proteins, cytoskeletal proteins, etc.), to the plasma membrane. Once recruited to the plasma membrane by PIP_3, PH domain-containing proteins are co-localized with other membrane-associated signaling proteins, where they can influence signaling pathways.

PI3K is an integral part of several signaling cascades which culminate in cell proliferation, survival, cytoskeletal organization, membrane trafficking, membrane ruffling, differentiation, chemotaxis, and glucose homeostasis. In growth factor signaling, receptor ligand binding stimulates tyrosine phosphorylation of the receptor and downstream substrates. These regions of phosphorylated tyrosine residues serve as docking sites for PI3K via its SH2 domains. The association of PI3K with phosphorylated growth factor receptors localizes PI3K to the plasma membrane, bringing it in close proximity to its inositol lipid substrates. PI3K binding to downstream substrates, such as FAK and Pyk2, also allows these signaling proteins to direct PI3K.

Enzymes which are regulated by PI3K are numerous and include phosphoinositide dependent kinases (PDK's), integrin-linked kinase (ILK), MAPK, Bruton's tyrosine kinase, and PKC ξ. PI3K's regulation of PDK1 is of great interest because this kinase phosphorylates and thereby activates the serine/threonine kinase Akt/PKB. Once activated, Akt/PKB then phosphorylates and in turn inhibits the activities of many targets including GSK-3α and β, Forkhead-related transcription factor 1 (FKHR-L1), and Bad.

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Specificity (cont'd):

PIP_3 also localizes phospholipase Cγ to the plasma membrane through its PH domain. By recruiting PLCγ to the membrane, PI3K increases the rate of hydrolysis of phosphatidylinositol 4,5-bisphosphate, generating the second messengers diacylglycerol (DAG), activating PKC, and inositol 1,4,5-trisphosphate (IP_3), releasing Ca^{2+} from intracellular stores which in turn activates Ca^{2+} sensitive protein such as the focal adhesion kinase family member Pyk2/RAFTK.

PI3K's comprise a family of homologous heterodimeric proteins composed of a catalytic subunit and a regulatory subunit. Three isoforms of the catalytic subunit have been described, p110α, p110β, and p110δ, each of which is encoded by its own gene. Five isoforms of the regulatory subunit have been described, p85α, p85β, p55α, p55γ, and p50α. The p85α gene encodes three of these regulatory subunits, produced through alternative splicing of the transcripts. The three products of the p85α gene are p85α, p50α, and p55α regulatory subunits. The p85β and the p55γ regulatory subunits are each encoded by a single gene. All of the regulatory subunits possess two SH2 domains with an intervening catalytic subunit-binding domain. The regulatory subunits also possess variable numbers of Bcr, SH3, and PRM domains. The presence of these various domains allows the regulatory subunits to serve as adaptor proteins.

This antibody recognizes the p85β subunit of PI3K.

Species Reactivity:

Human, monkey, mouse, rat, and bovine. Other species were not tested.

Applications:

This monoclonal antibody is suitable for use in immunohistochemistry with cryostat sections, immunoprecipitation, and Western blot analysis.

Suggested Working Dilutions:

The recommended dilution for Western blot analysis is 1:1000. The optimal concentration should be determined for each specific application.

Storage:

Store at 2-8°C. For long term storage, apportion into working aliquots and store at –20°C. Avoid repeated freeze-thaw cycles to prevent denaturing the antibody.

Expiration Date:

Expires one year from date of receipt when stored as instructed.

Related Products:

Rabbit (polyclonal) anti-AKT/PKB [pT308]	Cat. #	44-602G
Rabbit (monoclonal) anti-AKT/PKB [pS473]	Cat. #	44-621G
Rabbit (polyclonal) anti-GSK-3β [pS9]	Cat. #	44-600G
Rabbit (polyclonal) anti-GSK-3α [pY279]/GSK-3β [pY216]	Cat. #	44-604G
Rabbit (polyclonal) anti-GSK-3α /β	Cat. #	44-610
Rabbit (polyclonal) anti-PLCγ-1 [pY783]	Cat. #	44-696
Mouse (monoclonal) anti-PLCγ-1	Cat. #	AHO0792
Rabbit (polyclonal) anti-ERK1/2 [pTpY185/187]	Cat. #	44-680G
Rabbit (polyclonal) anti-BAD [pS112]	Cat. #	44-522
Rabbit (polyclonal) anti-BAD [pS136]	Cat. #	44-524

References:

Cantley, L.C. (2002) The phosphoinositide 3-kinase pathway. Science 296:1655-1657 (review).

Katso, R., K. Okkenhaug, K. Ahnadi, S. White, J. Timms, and M.D. Waterfield (2001) Cellular function of phosphoinositide 3-kinases: implications for development, homeostasis, and cancer. Ann. Rev. Cell Dev. Biol. 17:615-675 (review).

Wymann, M.P. and L. Pirola (1998) Structure and function of phosphoinositide 3-kinases. Biochim. Biophys. Acta 1436:127-150 (review).

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