

## PI(3)K $\alpha$ (K832R) <sup>GST</sup> Phosphoinositide 3-kinase p110 $\alpha$ , p85 $\alpha$ bovine, recombinant, Sf9 insect cells

Cat. No.	Amount
PR-941	10 $\mu$ g

For *in vitro* use only  
Quality guaranteed for 12 months  
Store at -20°C

### Form

Liquid. Supplied in 10 mM HEPES pH 7.5, 100 mM NaCl, 2.5 mM MgCl<sub>2</sub> and 50% glycerol.

### Molecular Weight

p110 $\alpha$ : 124.3 kDa  
p85 $\alpha$ : 83.5 kDa

### Purity

>95% by SDS-PAGE

### Description

The PI3K $\alpha$  (K832R) protein is a catalytically inactive mutant of PI3K $\alpha$  in which Arg916 was mutated to Pro. This recombinant catalytically inactive protein can be used as a negative control in any kind of PI3K $\alpha$  kinase activity studies.

The recombinant full length PI3K $\alpha$  mutant carries a N terminal GST-Tag and was purified by affinity chromatography. The GST-Tag facilitates the protein's application in typical GST pull-down assays.

### Note

Human p110 $\alpha$  differs from the bovine enzyme in only 2 positions, K532R and S535C. Both lie in the PIK domain of the enzyme (aa 525-696) and are not expected to interfere with binding of p85 (aa 31-108) or Ras (aa 173-292) or with catalytic function (aa 699-1064).

### General

Phosphoinositide 3-kinases (PI3Ks) phosphorylate phosphatidylinositols (PIs) at their 3' OH position generating lipid second messengers and thereby regulate numerous biological processes including cell growth, differentiation, survival, proliferation, migration and metabolism. On the basis of structural similarities and substrate specificity, the PI3K family can be subdivided into three classes termed I, II, and III.

All human class I members are heterodimers consisting of a catalytic subunit (MW approx. 110 kDa) and a non-catalytic subunit (MW 50, 55, 85, or 101 kDa) and are known to phosphorylate phosphatidylinositol (PI), phosphatidylinositol-4-mono-phosphate (PIP) and phosphatidylinositol-4,5-bisphosphate (PIP2) *in vitro*. The class I members can be further subdivided into class IA and IB PI3Ks. Class IA exists in three isoforms (p110 $\alpha$ , p110 $\beta$  and p110 $\delta$ ); whereas the only class IB member is termed p110 $\gamma$ .

Class IA PI3Ks are activated by adaptor proteins such as Ras or BCAP, or tyrosine-kinase-associated receptors including antigen, co-stimulatory and cytokine receptors (e.g. CD19, CD28, Insulin receptor, EGFR, and PDGFR). p110 $\gamma$  is activated by G-protein-coupled receptors (GPCRs). Effectors of class I PI3Ks are pleckstrin-homology domain proteins such as Akt/PKB, BTK, TEC, ITK, BAM32, and small GTPases (e.g. Cdc42, Rac, or Ras).

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The action of PI3Ks is regulated by the phosphatidylinositol-3,4,5-trisphosphate phosphatases SHIP and PTEN.

### Selected References:

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