

p- α PAK (Thr 423): sc-12925

BACKGROUND

p21-activated kinases (PAK) are serine/threonine kinases that link Rho GTPases to cytoskeletal reorganization and nuclear signaling. Three common isoforms are α PAK p68, β PAK p65 and γ PAK p62. α , β and γ PAK isoforms associate with Rac 1 and Cdc42 in their active GTP-bound state, inhibiting their intrinsic GTPase activity and mediating their autophosphorylation. γ PAK can undergo phosphorylation on Ser-19, Ser 141 and Thr 402, and phosphorylation of Ser 141 and Thr 402 correlates with γ PAK activation. Autophosphorylation of α PAK Thr 423 (Thr 402 for β PAK and Thr 421 for γ PAK) is catalyzed by Cdc42 and is required for kinase activation of PAK. Once phosphorylated and their affinity for Rac/Cdc42 reduced, PAK isoforms disassociate from the complex to seek downstream substrates. One such substrate is MEK kinase, an upstream effector of MEK4 which is involved in the JNK signaling pathway.

REFERENCES

- Didsbury, J., et al. 1989. Rac, a novel Ras-related family of proteins that are botulinum toxic substrates. *J. Biol. Chem.* 264: 16378-16382.
- Shinjo, K., et al. 1990. Molecular cloning of the gene for the human placental GTP-binding protein G_p (G25K): identification of this GTP-binding protein as the human homolog of the yeast cell-division-cycle protein Cdc42. *Proc. Natl. Acad. Sci. USA* 98: 9853-9857.
- Boguski, M.S. and McCormick, F. 1993. Proteins regulating Ras and its relatives. *Nature* 366: 643-654.
- Manser, E., et al. 1994. A brain serine/threonine protein kinase activated by Cdc42 and Rac 1. *Nature* 367: 40-46.
- Yan, M., et al. 1994. Activation of stress-activated protein kinase by MEK1 phosphorylation of its activator SEK1. *Nature* 372: 798-800.
- Minden, A., et al. 1994. Differential activation of ERK and JNK mitogen-activated protein kinases by Raf-1 and MEKK. *Science* 266: 1719-1723.
- Coso, O.A., et al. 1995. The small GTP-binding proteins Rac 1 and Cdc42 regulate the activity of the JNK/SAPK signaling pathway. *Cell* 81: 1137-1146.

CHROMOSOMAL LOCATION

Genetic locus: PAK1 (human) mapping to 11q13.5; Pak1 (mouse) mapping to 7 E2.

SOURCE

p- α PAK (Thr 423) is available as either goat (sc-12925) or rabbit (sc-12925-R) affinity purified polyclonal antibody raised against a short amino acid sequence containing Thr 423 phosphorylated α PAK of human origin.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.

PRODUCT

Each vial contains 100 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-12925 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p- α PAK (Thr 423) is recommended for detection of Thr 423 phosphorylated α PAK of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p- α PAK (Thr 423) is also recommended for detection of correspondingly phosphorylated α PAK in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for α PAK siRNA (h): sc-29700, α PAK siRNA (m): sc-29701, α PAK shRNA Plasmid (h): sc-29700-SH, α PAK shRNA Plasmid (m): sc-29701-SH, α PAK shRNA (h) Lentiviral Particles: sc-29700-V and α PAK shRNA (m) Lentiviral Particles: sc-29701-V.

Molecular Weight of p- α PAK: 65 kDa.

SELECT PRODUCT CITATIONS

- Luo, Z., et al. 2002. Regulation of AChR clustering by dishevelled interacting with MuSK and Pak1. *Neuron* 35: 489-505.
- O'Sullivan, G.C., et al. 2007. Modulation of p21-activated kinase 1 alters the behavior of renal cell carcinoma. *Int. J. Cancer* 121: 1930-1940.
- Wang, D., et al. 2009. A role for Gab 1/SHP2 in Thrombin activation of Pak1: gene transfer of kinase-dead Pak1 inhibits injury-induced restenosis. *Circ. Res.* 104: 1066-1075.
- Li, L.H., et al. 2010. P21-activated protein kinase 1 induces colorectal cancer metastasis involving ERK activation and phosphorylation of FAK at Ser-910. *Int. J. Oncol.* 37: 951-962.

RESEARCH USE

For research use only, not for use in diagnostic procedures.



Try **p- α PAK (17.Thr 423): sc-135755** or **p- α PAK (66.Thr 423): sc-135754**, our highly recommended monoclonal alternatives to p- α PAK (Thr 423).