SANTA CRUZ BIOTECHNOLOGY, INC.

# Pho4 (yC-20): sc-25208

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*The Power to Question*

## BACKGROUND

Cyclin-dependent kinases (Cdks) are key regulators of the cell division cycle. Pho85, which is a multifunctional Cdk in the budding yeast *Sacchromyces cerevisiae* participates in several signal transduction pathways. The responses mediated by Pho85 include cell-cycle progression and metabolism of nutrients such as phosphate and carbon sources. As part of a nutrient-responsive signaling pathway, the budding yeast cyclin-CDK complex Pho80-Pho85 phosphorylates the transcription factor Pho4 on five sites and inactivates it. The Pho85-Pho80 kinase complex is the yeast functional homologue of the mammalian Cdk5/p35(nck5a) kinase. Pho80-Pho85 phosphorylates Pho4 in a semi-processive fashion and, in addition, Pho80-Pho85 phosphorylates certain sites preferentially. Multiple phosphorylation sites provide overlapping and partially redundant layers of regulation that function to efficiently control the activity of Pho4. For example, phosphorylation of Pho4 at two sites promotes the factor's nuclear export and phosphorylation at a third site inhibits its nuclear import.

## REFERENCES


1. Wu, J.S., Xia, Z.X., Cao, Z., and Ao, S.Z. 1998. Cloning and expression of a novel PHO85 associated protein PAP1 gene of *Saccharomyces cerevisiae*. Sheng Wu Hua Xue Yu Sheng Wu Wu Li Xue Bao (Shanghai). 30: 14-20.
2. Komeili, A. and O'Shea, E.K. 1999. Roles of phosphorylation sites in regulating activity of the transcription factor Pho4. Science 284: 977-980.
3. Jeffery, D.A., Springer, M., King, D.S., and O'Shea, E.K. 2001. Multi-site phosphorylation of Pho4 by the cyclin-CDK Pho80-Pho85 is semi-processive with site preference. J. Mol. Biol. 306: 997-1010.
4. Ching, Y.P., Pang, A.S., Lam, W.H., Qi, R.Z., and Wang, J.H. 2002. Identification of a neuronal Cdk5 activator-binding protein as Cdk5 inhibitor. J. Biol. Chem. 277: 15237-15240.
5. Carroll, A.S. and O'Shea, E.K. 2002. Pho85 and signaling environmental conditions. Trends Biochem. Sci. 27: 87-93.
6. Huang, D., Moffat, J., and Andrews, B. 2002. Dissection of a complex phenotype by functional genomics reveals roles for the yeast cyclin-dependent protein kinase Pho85 in stress adaptation and cell integrity. Mol. Cell. Biol. 22: 5076-5088.


## SOURCE

Pho4 (yC-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of Pho4 of *Saccharomyces cerevisiae* origin.

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-25208 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## STORAGE

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

## APPLICATIONS

Pho4 (yC-20) is recommended for detection of Pho4 of *Saccaromyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048.

## RESEARCH USE

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

## PROTOCOLS

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