



Cup1 (y-61): sc-98271

BACKGROUND

The activity of a diverse subset of enzymes relies on the essential nutrient copper. Copper uptake requires tight regulation to ensure that sufficient copper is present in the cell to drive vital cellular processes, while avoiding the accumulation of copper to toxic levels. In *Saccharomyces cerevisiae*, copper regulation involves several proteins. Fre1, a surface reductase, reduces and mobilizes copper outside the cell, while the Ctr1 and Ctr3 proteins function as copper transport proteins within the plasma membrane. Regulation of these proteins occurs at the transcriptional level. Cup1, a metallothionein-like protein, binds copper and protects *S. cerevisiae* from copper poisoning. Ace1 activates CUP1 transcription in response to copper ions. Heat shock transcription factor also activates CUP1.

REFERENCES

1. Fogel, S. and Welch, J.W. 1982. Tandem gene amplification mediates copper resistance in yeast. *Proc. Natl. Acad. Sci. USA* 79: 5342-5346.
2. Fogel, S., Welch, J.W. and Maloney, D.H. 1988. The molecular genetics of copper resistance in *Saccharomyces cerevisiae*—a paradigm for non-conventional yeasts. *J. Basic Microbiol.* 28: 147-160.
3. Buchman, C., Skroch, P., Welch, J., Fogel, S. and Karin, M. 1989. The CUP2 gene product, regulator of yeast metallothionein expression, is a copper-activated DNA-binding protein. *Mol. Cell. Biol.* 9: 4091-4095.
4. Silar, P., Butler, G. and Thiele, D.J. 1991. Heat shock transcription factor activates transcription of the yeast metallothionein gene. *Mol. Cell. Biol.* 11: 1232-1238.
5. Yamaguchi-Iwai, Y., Serpe, M., Haile, D., Yang, W., Kosman, D.J., Klausner, R.D. and Dancis, A. 1997. Homeostatic regulation of copper uptake in yeast via direct binding of Mac1 protein to upstream regulatory sequences of FRE1 and CTR1. *J. Biol. Chem.* 272: 17711-17718.
6. Pena, M.M., Koch, K.A. and Thiele, D.J. 1998. Dynamic regulation of copper uptake and detoxification genes in *Saccharomyces cerevisiae*. *Mol. Cell. Biol.* 18: 2514-2523.
7. Pena, M.M., Puig, S. and Thiele, D.J. 2000. Characterization of the *Saccharomyces cerevisiae* high affinity copper transporter Ctr3. *J. Biol. Chem.* 275: 33244-33251.
8. Yonkovich, J., McKendry, R., Shi, X. and Zhu, Z. 2002. Copper ion-sensing transcription factor Mac1p post-translationally controls the degradation of its target gene product Ctr1p. *J. Biol. Chem.* 277: 23981-23984.

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.

RESEARCH USE

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

SOURCE

Cup1 (y-61) is a rabbit polyclonal antibody raised against amino acids 1-61 representing full length Cup1 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.

APPLICATIONS

Cup1 (y-61) is recommended for detection of Cup1 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], 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).

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.