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Product Information

Monoclonal Anti-Cdc14A

Clone DCS-291

Purified Mouse Immunoglobulin

Product Number **C 2238**

Product Description

Monoclonal Anti-Cdc14A (mouse IgG1 isotype) is derived from the DCS-291 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from mice immunized with a C-terminal fragment (residues 343-623) of human Cdc14A2 fused with GST. The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2).

Monoclonal Anti-Cdc14A recognizes human Cdc14A. The antibody may be used in various immunochemical techniques including immunoblotting (approx. 50 kDa), immunoprecipitation, immunocytochemistry, and ELISA.

Coordination of cytokinesis and exit from mitosis in *Saccharomyces cerevisiae* and *Schizosaccharomyces pombe* requires the activity of several proteins, among them the Cdc14 (Flp1) phosphatase. The Cdc14 gene was identified by isolation of temperature sensitive yeast strains where growth was arrested at high temperature. This growth arrest phenotype could be complemented by human cDNAs of two genes, hCdc14A and hCdc14B that have sequence homology to the yeast Cdc14 gene product.¹ hCdc14A is 64% identical to the yeast Cdc14 protein and contains a phosphatase domain located between amino acids 60-330. The hCdc14B protein, encoded by a different gene, is 85% identical to hCdc14A and has a unique sequence at its N-terminal end.¹ Both hCdc14A and hCdc14B are expressed in many human tissues with higher expression in kidney, heart, and skeletal muscle. hCdc14A protein is localized in the cytosol, particularly on centrosomes.¹

Overproduction of hCdc14A leads to progressive cell death, accompanied by accumulation of pre-G1 DNA fragments and gradual elimination of cells at the G2/M transition.² In 50 percent of the mitotic cells, multipolar mitotic spindles and misaggregated chromosomes are found. hCdc14A localizes to the centrosomes at the cell-cycle interphase stage. When the cell enters mitosis, this localization disappears suggesting that hCdc14A dissociates from the centrosomes at the G2/M transition.² hCdc14A localizes to interphase centrosomes, but not to mitotic centrosomes, while hCdc14B localizes to the interphase nucleolus. Thus each isoform regulates separate cell cycle events.³

Cdc14A may affect cell cycle progression by its ability to dephosphorylate p53 at Ser³¹⁵. This phosphatase activity is mediated by the interaction between the N-terminus of hCdc14A and the C-terminus of p53.⁴

Monoclonal antibodies specific for hCdc14A are an important tool for studying cell cycle progression.

Reagent

Monoclonal Anti-Cdc14A is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: Approx. 2 mg/ml.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in frost-free freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a minimum working antibody concentration of 0.5 µg/ml is recommended using a total cell extract of the A431 cell line.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining optimal working dilutions by titration.

References

1. Liwu, L, et al., J. Biol. Chem., **272**, 29403-29406 (1997).
2. Mailand, N., et al., Nature Cell Biol., **4**, 317-322 (2002).
3. Kaiser, B., et al., Mol. Bio. Cell, **13**, 2289-2300, (2002).
4. Liwu, L., et al., J. Biol. Chem., **275**, 2410-2414 (2000).

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