

Product Information

MONOCLONAL ANTI-CYCLIN A

Mouse Ascites Fluid
Clone CY-A1

Product Number **C4710**

Product Description

Monoclonal Anti-Cyclin A (mouse IgG2a isotype) is derived from the CY-A1 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. Purified recombinant cyclin A of bovine origin (N-terminal truncated, corresponding to amino acids 162-433) was used as the immunogen. 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).

Cell division is a fundamental biological process, consisting of the splitting of the cell and its genetic material into two daughter cells. Mitosis results in the formation of two new nuclei, each having the same number of chromosomes as the parental nucleus. During the cell cycle of most somatic cells, DNA synthesis (S-phase) and mitosis (M-phase) are separated by two "growth" stages (G₁ and G₂) of varying duration. Thus, a typical eukaryotic cell sequentially passes through G₁, S, G₂, and M and back into G₁ during a single cycle.¹ Regulation of cell cycle progression in eukaryotic cells depends on the expression of cyclin proteins.² These proteins are the regulatory subunits of the cell cycle dependent kinases, which are responsible for the phosphorylation of several cellular targets. Complexes of cyclins and cyclin dependent kinases (cdks) play a key role in cell cycle control. Within the complexes, the cyclin subunit serves a regulatory role, while the cdk has a catalytic protein kinase activity.³ The most prominent cdk is p34^{cdc2}, also known as cdk1. Members of the cyclin family of proteins combine with the p34^{cdc2} kinase subunit to form active cdc2 kinase, which initiates M phase of mitosis and meiosis. Deactivation of p34^{cdc2} is required for exit from mitosis. Besides involvement in the G₂ to M transition, these complexes function as key regulators of each step of the cell cycle: p34^{cdc2} acts as a catalytic subunit of maturation-promoting factor (MPF) when it forms a complex with cyclin B.^{3,4} However, when p34^{cdc2} combines with other types of cyclins,

termed G₁ cyclins, it commits the cell to DNA replication. Therefore, the cell cycle can be considered as a cyclin cycle which is controlled by biochemical modifications such as phosphorylation of p34^{cdc2} and formation of complex(es) with other proteins, including the p34^{cdc2}.⁵ Cyclin A is a nuclear protein during S phase, and disappears before metaphase. It binds both cdk2 and cdc2, giving two distinct cyclin A kinase activities, one appearing in G₁/S phase, the other in G₂/M. The availability of monoclonal antibody reacting specifically with cyclin A enables the subcellular detection and localization of cyclin A and the measurement of relative differences in cyclin A levels as a function of cell cycle phase.

Monoclonal Anti-Cyclin A may be used for the localization of cyclin A, using various immunochemical assays including immunoblot and immunocytochemistry.

Reagents

The product is provided as ascites fluid with 0.1% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content a material safety 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 extended storage freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use.

Product Profile

In order to obtain best results, it is recommended that each user determine the optimal working dilution for individual applications by titration assay.

References

1. Freeman, R., and Donoghue, D., *Biochemistry*, **30**, 2293 (1991).
2. Pines, J., and Hunter, T., *J. Cell Biol.*, **115**, 1 (1991).
3. Yamashita, M., et al., *Dev. Growth Differ.*, **33**, 617 (1991).
4. Hirai, T., et al., *Mol. Reprod. Dev.*, **33**, 131 (1992).
5. Nurburg, C., and Nurse, P., *Ann. Rev. Biochem.*, **61**, 441 (1992).

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