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ProductInformation

Monoclonal Anti-Cyclin D_1
Clone DCS-6
Mouse Ascites Fluid

Product No. **C 7464**

Product Description

Monoclonal Anti-Cyclin D_1 (mouse IgG2a isotype) is derived from the DCS-6 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. Recombinant human cyclin D_1 protein 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).

Monoclonal Anti-Cyclin D_1 recognizes cyclin D_1 (36 kDa, and several lower and higher MW bands), using immunoblotting, immunocytochemistry, immunoprecipitation and immunohistochemistry (methacarn and formalin-fixed, paraffin-embedded tissue,[11] upon microwave treatment). The antibody is useful in antibody-mediated knock-out experiments. The product does not cross-react with other D-type cyclins. Cross-reactivity has been observed with human,monkey, rat and mouse cyclin D_1.

Monoclonal Anti-Cyclin D_1 may be used for the localization of Cyclin D_1 using various immunochemical assays such as immunoblotting, immunocytochemistry, immunoprecipitation, immunohistochemistry and antibody-mediated knock-out experiments.

During the cell cycle of most somatic cells, DNA synthesis (S-phase) and mitosis (M-phase) are separated by two gap phases (G_1 and G_2) of varying duration. Thus, a typical eukaryotic cell sequentially passes through G_1, S, G_2, and M and back into G_1 during a single cycle.[12] Regulation of cell cycle progression in eukaryotic cells depends on the expression of cyclin proteins.[13] These proteins are the regulatory subunits of the cyclin dependent kinases (CDKs), which are responsible for the phosphorylation of several cellular targets. Complexes of cyclins and CDKs play a key role in cell cycle control. Within the complexes, the cyclin subunit serves a regulatory role, whereas CDKs have a catalytic protein kinase activity.[14] Members of the cyclin family of proteins combine with a CDK subunit to form the active kinase, which initiates G_2 to M and G_1 to S transition. The latter are controlled by cyclins termed G_1 cyclins, which commit the cell to DNA replication. Therefore, the cell cycle can be considered as a cyclin cycle which is controlled by biochemical modifications and formation of complex(es) with CDKs.[15] At least five candidate G_1-phase cyclins, termed cyclins C, D_1, D_2, D_3, and E have been identified in mammalian cells. Each of these cyclins can associate with one or more of the CDK family members. D-type cyclins are induced during the G_1 phase of the mammalian cell cycle in response to a variety of mitogenic growth factors. The three distinct members of the D-type cyclin family are differentially and combinatorially expressed in various cell lineages. Once induced, the D-type cyclins accumulate in complexes with CDKs, whose kinase activity is thought to be necessary for driving cells into S phase. The major catalytic partners of the D-type cyclins are CDK4 and CDK6, but at least some D-type cyclins also interat with other CDKs, including CDK2 and CDK5. Cyclin D_1- and D_2-associated CDK4 and/or CDK6 kinase activities have been detected in mid-G_1, prior to the activation of any other known CDK, and they culminate in late G_1 phase. The cyclin D_3-associated CDK4 and/or CDK6 exhibit kinase activities at the G_1/S transition. Cyclins D_1, D_2 and D_3 can be distinguished by their slightly different mobilities on denaturing gels. Under these conditions, the apparent masses are 36, 33-35 and 31-34 kD for cyclins D_1, D_2 and D_3, respectively. Because D-type cyclins probably serve as integrators of growth factor-induced signals with the cell cycle clock, aberrant expression of these proteins might play a role in disrupting the normal timing of events governing G_1 progression and, in so doing, contribute to oncogenesis. Indeed, a link between tumor formation and inappropriate expression of cyclins has been established.[16,17] Overexpression of this protein as a result of chromosomal rearrangement, occurs in parathyroid tumors and centrocytic lymphomas, and amplification of the cyclin D_1 gene has been observed in a significant percentage of other cancers, including breast, squamous, and esophageal carcinomas.

Immunochemical techniques provide a convenient and sensitive method for detection of these cyclins in human tumor tissues. Such assays facilitate studies directed toward correlating the phenotypic subtypes and aggressiveness of particular human tumors known to exhibit cyclin D_1 overexpression and enable studies with other types in which cyclins D_2 and D_3 are similarly implicated in pathogenesis. The availability of monoclonal antibody reacting specifically with cyclin D_1 enables the subcellular detection and localization of cyclin D_1 and the measurement of relative differences in cyclin D_1 levels as a function of cell cycle phase.

Reagents
The product is provided as ascites fluid with 15 mM sodium azide as a preservative.

Precautions
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 hazardous and safe handling practices.

Product Profile
A minimum working dilution of 1:200 is determined by immunoblotting, using a human tumor cell line extract.

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

Storage
For continuous use, store at 2-8 °C for up to one month. 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.

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