



## Product Information

### Monoclonal Anti-PSTAIR Clone PSTAIR Mouse Ascites Fluid

Product No. **P 7962**  
Lot 016H4844

Monoclonal Anti-PSTAIR (mouse IgG1 isotype) is derived from the PSTAIR hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BALB/c mice. A synthetic 16 amino acid oligopeptide containing the PSTAIR sequence, conjugated to BSA, was used as the immunogen.<sup>1</sup> The isotype is determined using Sigma ImmunoType™ Kit (Sigma ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma ISO-2). The product is provided as ascites fluid with 0.1% sodium azide (see MSDS)\* as a preservative.

#### Specificity

Monoclonal Anti-PSTAIR recognizes an epitope present in the PSTAIR sequence<sup>1</sup> of p34<sup>cdc2</sup> (cdk1), and of other cyclin-dependent kinases containing the PSTAIR motif (cdk2 and cdk3). The antibody recognizes 31-34 kD proteins (1-4 bands) in immunoblotting.<sup>1-7</sup> The product is also reactive in ELISA<sup>1</sup> and immunoprecipitation.<sup>1</sup> It cannot precipitate p34<sup>cdc2</sup> when it is complexed with cyclin B.<sup>1</sup> Cross-reactivity has been observed with human, monkey, mouse,<sup>1,8</sup> Japanese quail,<sup>1,3</sup> fish (goldfish,<sup>4-7</sup> carp,<sup>1,5,7</sup> eel,<sup>1</sup> starfish,<sup>1</sup> amago salmon<sup>1</sup>), *Xenopus*,<sup>1</sup> ciliates,<sup>1</sup> and plants (lily,<sup>1,2</sup> onion<sup>1</sup>).

#### Titer

A titer of 1:4,000 was determined by indirect immunoblotting using a COS-7 cell extract.

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

#### Description

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 (G<sub>1</sub> and G<sub>2</sub>) of varying duration. A typical eukaryotic cell sequentially passes through G<sub>1</sub>, S, G<sub>2</sub>, and M and back into G<sub>1</sub> during a single cycle.<sup>9</sup> Maturation-promoting factor (MPF),

originally found during meiosis in frog oocytes, is a cytoplasmic factor which is highly conserved among a wide range of species and plays a key role in the progression of the cell cycle from interphase (G<sub>2</sub>) to metaphase (M), in both meiosis and mitosis. The cell cycle can be considered as a cyclin-dependent kinases (cdks) cycle which is probably controlled by biochemical modifications such as phosphorylation of CDKs and formation of complex(es) with other proteins, including the cyclins.<sup>10</sup> CDKs are key regulators of cell cycle progression.<sup>11,12</sup> CDKs are closely related in size (35-40 kD) and sequence (>40% identity) and associate with and are activated by a cyclin which acts as a regulatory subunit. In the fission yeast *Shizosaccharomyces pombe*, a single major CDK has been identified (cdc2) while in human cells, the growing list of CDKs now includes cdc2 (Cdk1), and Cdk2 to Cdk7. The typical CDK catalytic subunit contains a 300 amino acid catalytic core that is completely inactive when monomeric and unphosphorylated.<sup>13</sup> The primary regulator of CDK activity is the cyclin molecule. Each CDK interacts with a specific subset of cyclins which activate them by enabling their phosphorylation at specific residues. For example, the activation of cdc2 requires the phosphorylation of a conserved Threonine161 (Thr160 in cdk2) and then it may be inactivated by a second phosphorylation at Tyrosine15.<sup>14</sup> CDKs are constitutively expressed throughout the cell cycle and are activated and inactivated by specific kinases and phosphatases which are responsible for the specific phosphorylation and dephosphorylation.<sup>15,16</sup> In every eukaryote examined, CDKs contain an evolutionary conserved 16 amino acid sequence called PSTAIR (EGVPSTAIRESLLKE) which distinguishes them from other protein kinases. The PSTAIR motif is involved in the complex formation with cyclins. The availability of monoclonal antibody reacting specifically with the PSTAIR sequence<sup>1,17</sup> enables the subcellular detection and localization of the various CDKs and examination of substrate interactions, in a variety of organisms.

### Uses

Monoclonal Anti-PSTAIR may be used for the localization of cyclin-dependent kinases, containing the PSTAIR motif using various immunochemical assays including ELISA, immunoblot and immunoprecipitation.

### Storage

For extended storage freeze in working aliquots. For continuous use, store at 2-8 °C for up to one month. 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.

\* 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.

### References

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