



**MONOCLONAL ANTI-PROLIFERATING
CELL PROTEIN KI-67
Clone PP-67
Mouse Ascites Fluid**

Product No. **P6834**

Product Information

Product Description

Monoclonal Anti-Proliferating Cell Protein Ki-67 (mouse IgM isotype) is produced from the PP-67 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from an immunized mouse. A HeLa cell nuclear preparation was used as the immunogen. 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).

Monoclonal Anti-Proliferating Cell Protein Ki-67 reacts with the Ki-67 nuclear antigen (345 and 395 kD, and several lower molecular weight proteins) in immunoblotting. The product shows an immunohistochemical staining pattern similar to that obtained with other anti-Ki-67/MIB-1 reagents. It labels proliferating cells in frozen human tissue and in formalin-fixed, paraffin-embedded tissue. A microwave heating retrieval step is required for successful labeling of routinely formalin-fixed, paraffin-embedded human tissue.

The proliferative activity of a tumor or a tissue is determined by the number of cells in cycle and the time taken to complete the cell cycle. There is a strong correlation between the proliferation rate of tumor cells and the clinical outcome. A high proliferation rate is associated with a high degree of tumor aggressiveness.¹⁻⁴ Consequently, measurement of cell proliferation may provide useful information concerning tumor prognosis and can aid diagnosis, especially for low grade non-Hodgkin's lymphomas. Ki-67 antigen is the prototypic cell cycle related nuclear protein, expressed in proliferating cells in G₁, S, G₂ and M, but not in G₀. The Ki-67 antigen is a large basic protein found in two forms with molecular weights of 345 and 395 kD. Other nuclear proteins, which are related to Ki-67 antigen (i.e., they are recognized by anti-Ki-67 antibodies), have also been described. These proteins have molecular weights in the range of 40 and 100 kD. The distribution of Ki-67 protein in normal tissues reflects their known cell kinetics. Thus, germinal center

cells in tonsil, basal cells of epithelium and undifferentiated spermatogonia of the testis, but not liver, kidney and brain cells, express Ki-67 antigen. Ki-67 antigen also appears in peripheral blood lymphocytes which have been stimulated to proliferate by phytohemagglutinin. It is lost from HL-60 cells (a promyelocytic cell line) after they have been induced to differentiate into resting macrophages by phorbol esters. However, uniform expression of Ki-67 antigen throughout cell cycle has been reported for other cell lines. The exact function of Ki-67 antigen is not known.

Its increasing level and continuous expression throughout the cell cycle and its widespread evolutionary conservation in both neoplastic and normal tissues from many species besides man,⁵ may indicate that the protein has an important role in the regulation of cell proliferation. However, this view is not supported by observations that some proliferating cell lines lack the Ki-67 antigen, (i.e. it may not be essential for cell proliferation). Due to the nature of the Ki-67 antigen, assessment of its expression in normal, reactive and neoplastic tissues is important. Antibodies reacting specifically with the Ki-67 antigen,⁶ are useful tools in the detection and localization of this proliferation marker, using various immunochemical techniques, such as immunohistochemistry,¹⁻⁶ immunoblotting,⁷ ELISA⁸ and flow cytometry.⁹

Monoclonal Anti-Proliferating Cell Protein Ki-67 may be used for the detection and localization of Ki-67 protein using various immunochemical assays such as immunoblotting and immunohistochemistry.

Reagents

The product is provided as ascites fluid with 15 mM sodium azide (see MSDS)* 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 1:800 is determined by indirect immunoperoxidase labeling of microwave-treated formalin-fixed, paraffin-embedded sections of human tonsil.

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.

References

1. Gerdes, J., *Sem. Canc. Biol.*, **1**, 99 (1990).
2. Quinn, C.M., and Wright, N.A., *J. Pathol.*, **160**, 93 (1990).
3. Brown, D.C., and Gatter, K.C., *Histopathology*, **17**, 489 (1990).
4. Yu, C.C.-W., et al., *Histochemical J.*, **24**, 121 (1992).
5. Falini, B., et al., *J. Histochem. Cytochem.*, **37**, 1471 (1989).
6. Gerdes, J., et al., *Int. J. Cancer*, **31**, 13 (1983).
7. Gerdes, J., et al., *Am. J. Pathol.*, **138**, 867 (1991).
8. Key, G., *J. Immunol. Meth.*, **177**, 113 (1994).
9. Schwarting, R., et al., *J. Immunol. Meth.*, **90**, 65 (1986).

Pcs12/99

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications.

Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply.

Please see reverse side of the invoice or packing slip.