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MONOCLONAL ANTIBODY

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Catalog No. 51-003

Anti- 5-Methylcytosine

BACKGROUND

DNA methylation is a type of chemical modification of DNA that can be inherited and subsequently removed without changing the original DNA sequence. As such, it is part of the epigenetic code and is also the most well characterized epigenetic mechanism. DNA methylation involves the addition of a methyl group to DNA - for example, to the number 5 carbon of the cytosine pyrimidine ring - in this case with the specific effect of reducing gene expression. In adult somatic tissues, DNA methylation typically occurs in a CpG dinucleotide context; non-CpG methylation is prevalent in embryonic stem cells. In plants, cytosines are methylated both symmetrically (CpG or CpNpG) and asymmetrically (CpNpNp), where N can be any nucleotide but guanine.This hybridoma has been constructed by Prof. H. Sano.

Product type	Primary antibodies
Host	Mouse
Source	Ascites fluid
Form	Liquid Purified mouse IgM 1 mg/ml in PBS with 50% glycerol, filter-sterilized
Volume	100 μg
Concentration	
Specificity	5-Methylcytosine
Antigen	5-Methylcytosine conjugated to bovine serum albumin (Ref 3)
Clone	5MC-CD
Isotype	IgM

Application notes

IC, Immuno-blotting

Recommended use

Recommended dilutions

Immunocytochemistry, ~50-100 fold dilution (Figure below and Ref.1 & 2)

Immuno-blotting detection of DNA with 5-methylocytosine on nitrocellulose, ~1000 fold dilution (Ref. 3 & 4)

Optimal dilutions/concentrations should be determined by the end user.

Staining Pattern

Cross reactivity DNA with 5-Methylcytosine (methylated DNA), any species

Storage -20°C (long period, -80°C)

References

1) Sharif J. et al. The SRA protein Np95 mediates epigenetic inheritance by recruiting Dmnt1 to methylated DNA. Nature 450: 908-912 (2007)

2) Nishiyama R. et al. A chloroplast-resident DNA methyltransferase is responsible for hypermethylation of chloroplast genes in Chlamydomonas maternal gametes. PNAS 99: 5925-30 (2002).

3) Sano H, Sager R. Detection of heavy methylation in human repetitive DNA subsets by a monoclonal antibody against 5-methylcytosine Biochim Biophys Acta. 951:157-65 (1988).

4) Sano H. Royer HD. & Sager R. Identification of 5-methycytosine in DNA fragment immobilized on nitrocellulose paper. PNAS 77:3581-85 (1980)

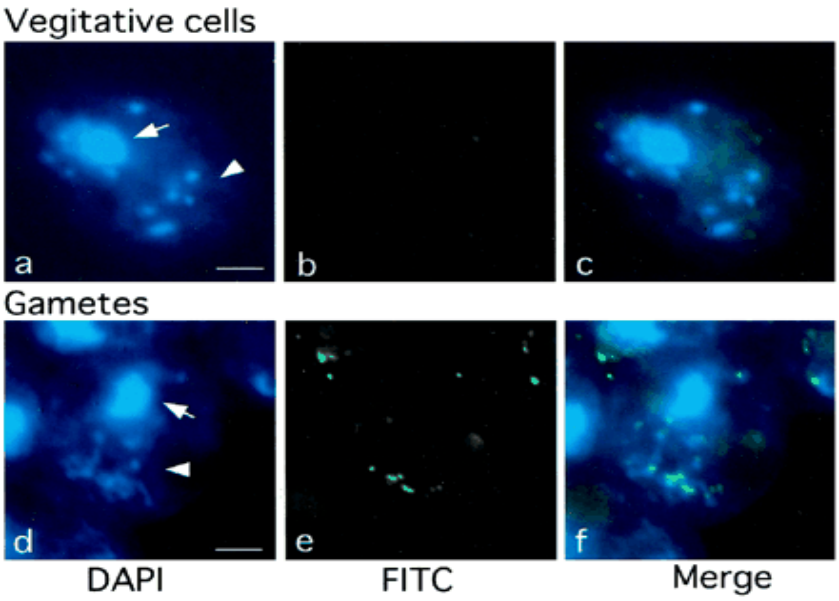

Fig. Methylation of chloroplast DNA visualized by immunochemistry.
Samples are Chlamidomonas me-1 cells.
Left: DAPI-stained cells.
Middle: Cells stained with anti-5MeC antibody and FITC-conjugated 2nd antibody.
Right: Merged image. Chloroplast DNA is exclusively methylated in gamete cells

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