

Anti-5-Methylcytosine antibody, mouse monoclonal, IgM (5MC-CD), biotinylated

51-004 50 µg

Shipping and Storage: Shipped at 4°C or -20°C. Store at -20°C.

Immunogen: 5-Methylcytosine conjugated to bovine serum albumin (Ref 3)

Form: Purified biotinylated IgM, 1 mg/ml in PBS- with 50% glycerol, filter-sterilized, azide and carrier

Isotype: mouse IgM

Reactivity: DNA with 5-Methylcytosine (methylated DNA), any species free.

Applications

- 1) Immunocytochemistry (Figure below and Ref.1 & 2) (~50-100 fold dilution)
- 2) Immuno-blotting detection of DNA with 5-methylcytosine on nitrocellulose (Ref. 3 & 4) (~1000 fold dilution). Not tested with other application

Background: DNA methylation is a type of chemical modification of DNA that can be inherited and subsequently removed without changing the original DNA sequence. Therefore it is part of the epigenetic code and is also the most well characterized epigenetic mechanism. DNA methylation results in addition of a methyl group to DNA — for example, to the number 5 carbon of the cytosine pyrimidine ring — which involves reduction in gene expression. In adult somatic tissues, DNA methylation typically occurs in a CpG dinucleotide context; non-CpG methylation is prevalent in embryonic stem cells. This hybridoma has been constructed by Prof. H. Sano.

References: This product has been used in references 1-4 (& many more publications).

1. Sharif J *et al* “The SRA protein Np95 mediates epigenetic inheritance by recruiting Dmnt1 to methylated DNA” *Nature* **450**: 908-912 (2007) PMID: [17994007](#)
2. Nishiyama R *et al* “A chloroplast-resident DNA methyltransferase is responsible for hypermethylation of chloroplast genes in Chlamydomonas maternal gametes” *PNAS* **99**: 5925-5930 (2002) PMID: [11983892](#)
3. Sano H *et al* “Detection of heavy methylation in human repetitive DNA subsets by a monoclonal antibody against 5-methylcytosine” *Biochim Biophys Acta* **951**:157-65 (1988) PMID: [2847796](#)
4. Sano H *et al* “Identification of 5-methylcytosine in DNA fragment immobilized on nitrocellulose paper” *PNAS* **77**:3581-3585 (1980) PMID: [6251470](#)

Vegitative cells



Gametes

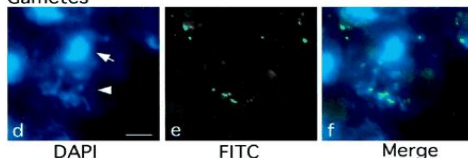


Fig.1 Methylation of chloroplast DNA visualized by immunocytochemistry. Samples are Chlamydomonas me-1 cells.

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.

to be continued...

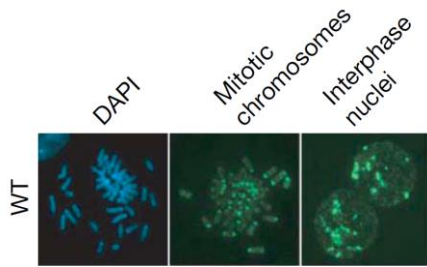


Fig.2 Detection of DNA methylation in mouse embryonic stem cells by immunofluorescence staining with the anti-5MeC antibody

Intense 5-methylcytosine staining at pericentromeric regions was seen in the mitotic chromosome and interphase nuclei of ESCs (For details, see Reference 1).