

## anti- 5-Methylcytosine antibody, mouse IgM (clone 5MC-CD)

Cat.# 51-003 100 µg

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. This hybridoma has been constructed by Prof. H. Sano.

### 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).

### Specifications

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

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

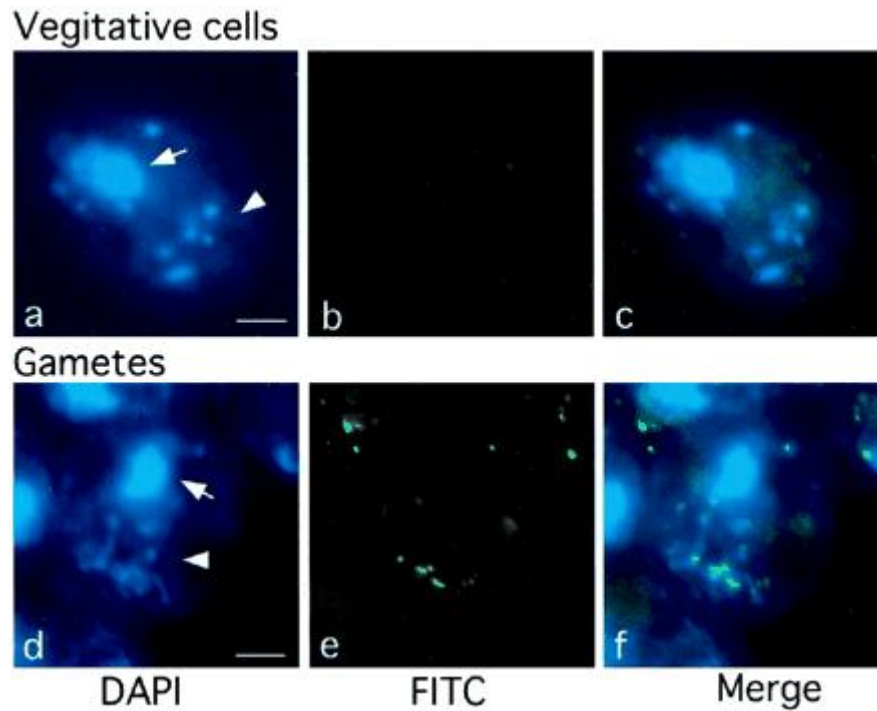
Isotype: IgM

Form: Purified mouse IgM 1 mg/ml in PBS with 50% glycerol, filter-sterilized

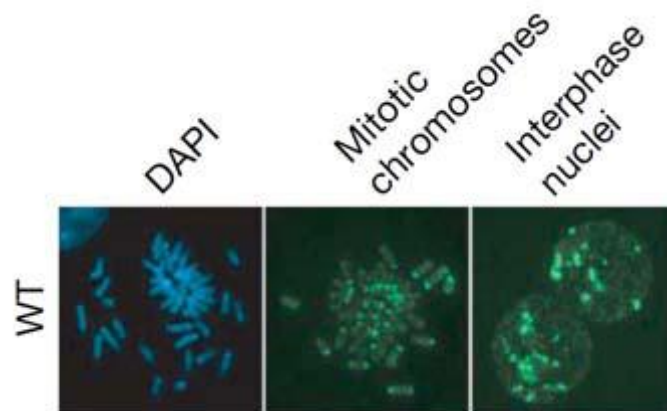
Storage: -20°C (long term storage, -80 °C)

### References:

1. Sharif J. et al. The SRA protein Np95 mediates epigenetic inheritance by recruiting Dmmt1 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-methylcytosine in DNA fragment immobilized on nitrocellulose paper. *PNAS* 77:3581-85 (1980)
- Note: this product has been used in references 1-3*



**Fig.1.** 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 2<sup>nd</sup> antibody. Right: Merged image. Chloroplast DNA is exclusively methylated in gamete cells.



**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. (see Reference 1.).