



## MONOCLONAL ANTIBODY

*For research use only. Not for clinical diagnosis.***Catalog No. 51-001****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.

<b>Product type</b>	Primary antibodies
<b>Host</b>	Mouse
<b>Source</b>	Ascites fluid
<b>Form</b>	Liquid
	Mouse ascites fluid added with 0.05 % sodium azide
<b>Volume</b>	100 µl
<b>Concentration</b>	
<b>Specificity</b>	5-Methylcytosine
<b>Antigen</b>	5-Methylcytosine conjugated to bovine serum albumin (Ref 3)
<b>Clone</b>	5MC-CD
<b>Isotype</b>	IgM

**Application notes** IC, Immuno-blotting  
**Recommended use**

**Recommended dilutions**

Immunocytochemistry: ~200 fold dilution (Figure below and Ref.1 & 2)

Immuno-blotting detection of DNA with 5-methylcytosine on nitrocellulose: ~3000 fold dilution (Ref. 3 & 4)

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

**Staining Pattern**

**Cross reactivity** DNA with 5-Methylcytosine

**Storage** 4°C (long period, -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)

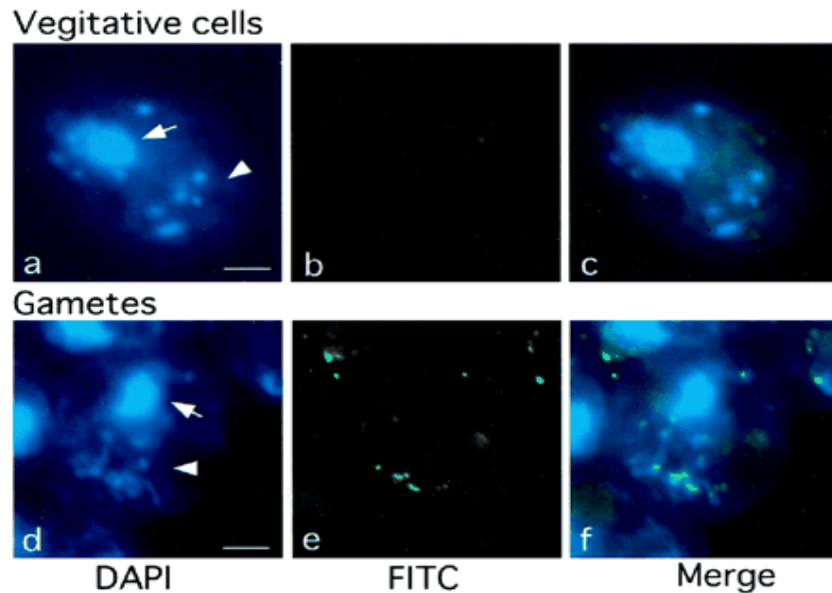


Fig. Methylation of chloroplast DNA visualized by immunochemistry.  
Samples are *Chlamidomonas me-1* cells.  
Left: DAPI-stained cells.  
Middle: Cells stained with anti-5MeC antibody and FITC-conjugated 2nd antibody.  
Right: Merged image. Chloroplast DNA is exclusively methylated in gamete cells

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## 抗- 5-Methylcytosine

### BACKGROUND

DNA のメチル化は DNA の配列の変化を伴わないで、メチル化された DNA が子孫に伝達されたり修飾が除かれたりする (エピジェネチックス)。DNA 上のシトシンの 5 位の炭素のメチル化は遺伝子発現の減少をもたらす。体細胞組織では DNA のメチル化は通常 CpG 配列上で起こるが、胚幹細胞ではメチル化は CpG 配列でないところで起こる場合が多い。本ハイブリドーマは奈良先端大の佐野浩教授が作成した。

Product type	一次抗体
Host	マウス
Source	腹水
Form	液体
	0.05 % sodium azide を添加したマウス腹水
Volume	100 µl
Concentration	
Specificity	5-Methylcytosine
Antigen	5-Methylcytosine をコンジュゲートした BSA (文献 3)
Clone	5MC-CD
Isotype	IgM

Application notes IC, Immuno-blotting  
Recommended use

### Recommended dilutions

間接免疫細胞染色：~200 倍希釈 (下図および文献 1、2)  
ニトロセルロース膜上にブロットされた 5-methylcytosine を含む DNA 断片の免疫学的方法による同定：~3000 倍希釈 (文献 3、4)

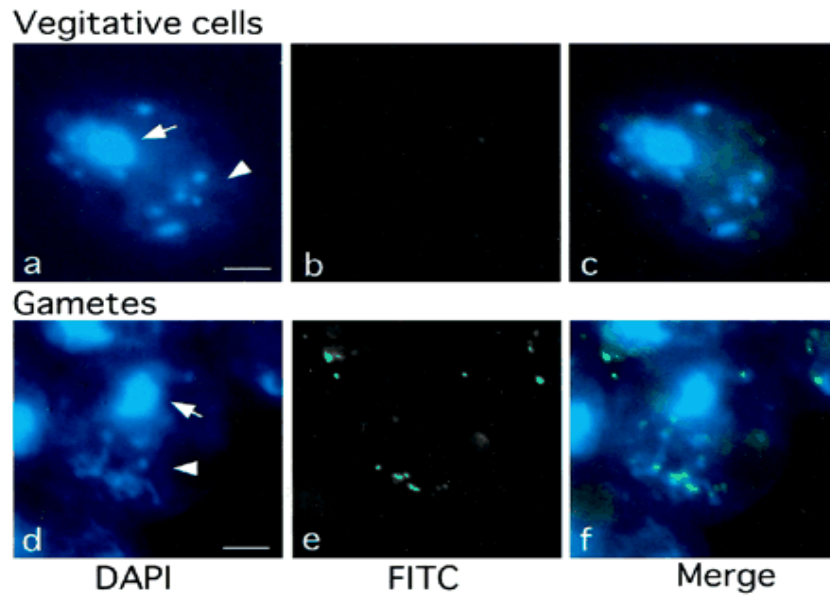
Optimal dilutions/concentrations should be determined by the end user.

### Staining Pattern

Cross reactivity	5-Methylcytosine を含有する DNA
Storage	4°C (長期, -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-methylcytosine in DNA fragment immobilized on nitrocellulose paper. PNAS 77:3581-85 (1980)



試料はクラミドモナス

左：DAPI 染色

中：抗-5MeC 抗体と FITC コンジュゲート 2 次抗体を用いた間接免疫染色。

右：2つの画像を重ねたイメージ。矢頭はクロロプラストの、矢は核の DNA を示している。配偶子のクロロプラスト DNA のみがメチル化されていることが示されている。

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