Human MCM4 Antibody

Monoclonal Mouse IgG_{2B} Clone # 1099134

Catalog Number: MAB11718

DESCRIPTION

Species Reactivity	Human
Specificity	Detects recombinant human MCM4 protein in Direct ELISA
Source	Monoclonal Mouse IgG_{2B} Clone # 1099134
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	*E. coli*-derived recombinant human MCM4 Met351-Leu507 Accession # P33991
Formulation	Lyophilized from a 0.2 μm filtered solution in PBS with Trehalose.

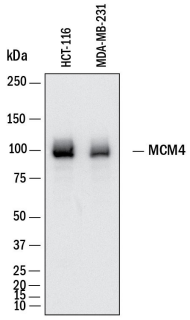
APPLICATIONS

Please Note: *Optimal dilutions should be determined by each laboratory for each application. General Protocols are available in the Technical Information section on our website.*

	Recommended Concentration	Sample
Western Blot	0.5 µg/mL	HCT-116 human colorectal carcinoma cell line and MDA-MB-231 human breast cancer cell line
Immunocytochemistry	3-25 µg/mL	Immersion fixed A549 human lung carcinoma cell line and MDA-MB-231 human breast cancer cell line
Immunohistochemistry	3-25 µg/mL	Immersion fixed paraffin-embedded sections of human cervical cancer, human colon cancer, and human testis
Simple Western	2-10 µg/mL	Jurkat human acute T cell leukemia cell line

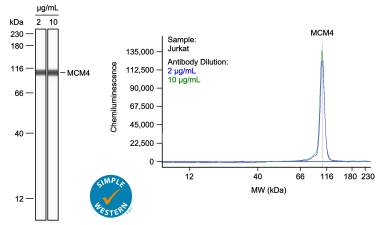
DATA

Western Blot



Detection of Human MCM4 by Western Blot. Western Blot shows lysates of HCT-116 human colorectal carcinoma cell line and MDA-MB-231 human breast cancer cell line. PVDF membrane was probed with 0.5 µg/ml of Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) followed by HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF018). A specific band was detected for MCM4 at approximately 96 kDa (as indicated). This experiment was conducted under reducing conditions and using Western Blot Buffer Group 1.

Simple Western



Detection of Human MCM4 by Simple Western™. Left: Simple Western lane view shows lysates of Jurkat human acute T cell leukemia cell line, loaded at 0.1 mg/ml. A specific band was detected for MCM4 at approximately 107 kDa (as indicated) using both 2 µg/ml and 10 µg/ml of Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) followed by HRP-conjugated Goat Anti-Mouse Secondary Antibody (Catalog # 042-205). This experiment was conducted under reducing conditions and using the 12-230kDa separation system. **Right:** Simple Western electropherogram showing the same Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) tested at 2 µg/ml (blue line) and 10 µg/ml (green line) in the Jurkat human acute T cell leukemia cell line.

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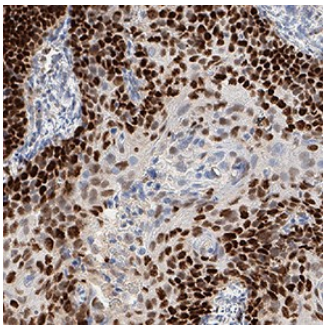
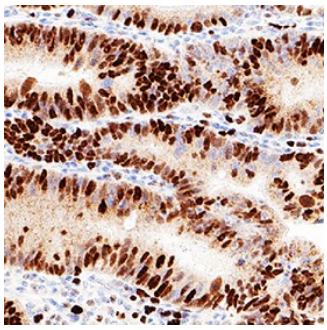
Immunohistochemistry



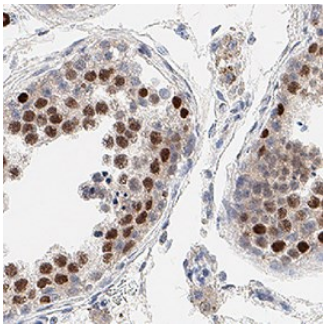
Detection of MCM4 in Human Cervical Cancer. MCM4 was detected in immersion fixed paraffin-embedded sections of human cervical cancer using Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) at 5 µg/ml for 1 hour at room temperature followed by incubation with the Anti-Mouse IgG VisUCyte™ HRP Polymer Antibody (Catalog # VC001) or the HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF007). Before incubation with the primary antibody, tissue was subjected to heat-induced epitope retrieval using VisUCyte Antigen Retrieval Reagent-Basic (Catalog # VCTS021). Tissue was stained using DAB (brown) and counterstained with hematoxylin (blue). Specific staining was localized to the nucleus. View our protocol for Chromogenic IHC Staining of Paraffin-embedded Tissue Sections.

Immunohistochemistry



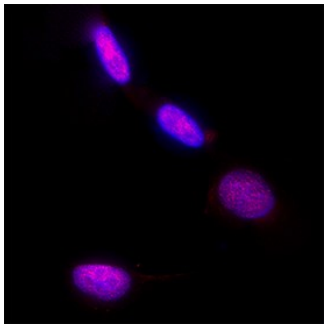
Detection of MCM4 in Human Colon Cancer. MCM4 was detected in immersion fixed paraffin-embedded sections of human colon cancer using Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) at 5 µg/ml for 1 hour at room temperature followed by incubation with the Anti-Mouse IgG VisUCyte™ HRP Polymer Antibody (Catalog # VC001) or the HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF007). Before incubation with the primary antibody, tissue was subjected to heat-induced epitope retrieval using VisUCyte Antigen Retrieval Reagent-Basic (Catalog # VCTS021). Tissue was stained using DAB (brown) and counterstained with hematoxylin (blue). Specific staining was localized to the nucleus. View our protocol for Chromogenic IHC Staining of Paraffin-embedded Tissue Sections.

Immunohistochemistry



Detection of MCM4 in Human Testis. MCM4 was detected in immersion fixed paraffin-embedded sections of human testis using Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) at 5 µg/ml for 1 hour at room temperature followed by incubation with the Anti-Mouse IgG VisUCyte™ HRP Polymer Antibody (Catalog # VC001) or the HRP-conjugated Anti-Mouse IgG Secondary Antibody (Catalog # HAF007). Before incubation with the primary antibody, tissue was subjected to heat-induced epitope retrieval using VisUCyte Antigen Retrieval Reagent-Basic (Catalog # VCTS021). Tissue was stained using DAB (brown) and counterstained with hematoxylin (blue). Specific staining was localized to the nucleus. View our protocol for Chromogenic IHC Staining of Paraffin-embedded Tissue Sections.

Immunocytochemistry



Detection of MCM4 in A549 cells. MCM4 was detected in immersion fixed A549 human lung carcinoma cell line using Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) at 8 µg/ml for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Mouse IgG Secondary Antibody (red; Catalog # NL007) and counterstained with DAPI (blue). Specific staining was localized to the nucleus. View our protocol for Fluorescent ICC Staining of Cells on Coverslips.

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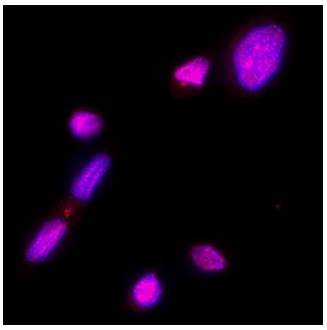

Detection of MCM4 in MDA-MB-231 cells. MCM4 was detected in immersion fixed MDA-MB-231 human breast cancer cell line using Mouse Anti-Human MCM4 Monoclonal Antibody (Catalog # MAB11718) at 8 µg/ml for 3 hours at room temperature. Cells were stained using the NorthernLights™ 557-conjugated Anti-Mouse IgG Secondary Antibody (red; Catalog # NL007) and counterstained with DAPI (blue). Specific staining was localized to the nucleus. View our protocol for Fluorescent ICC Staining of Cells on Coverslips.

PREPARATION AND STORAGE

Reconstitution	Reconstitute lyophilized material at 0.2 mg/ml in sterile PBS. For liquid material, refer to CoA for concentration.
Shipping	Lyophilized product is shipped at ambient temperature. Liquid small pack size (-SP) is shipped with polar packs. Upon receipt, store immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Minichromosome maintenance complex component 4 (MCM4) is a protein with a molecular weight of approximately 99 kDa. It belongs to the minichromosome maintenance (MCM) family, which is essential for the initiation and elongation phases of eukaryotic DNA replication. MCM4 plays a crucial role in ensuring that DNA replication occurs accurately and efficiently and is involved in the biological processes of cell cycle regulation and genomic stability. Dysregulation or mutations of MCM4 have been associated with various pathologies, including cancer, where its expression is linked to tumor progression and poor clinical outcomes. Overexpression of MCM4 is often found in aggressive cancers, and its expression levels may serve as a potential biomarker for cancer diagnosis and prognosis. Additionally, MCM4 is crucial in maintaining the integrity of DNA replication origins and is thought to play a role in resistance mechanisms to several chemotherapeutic drugs.

References:

1. Lei M. The MCM complex: its role in DNA replication and implications for cancer therapy. Curr Cancer Drug Targets. 2005 Aug;5(5):365-80. doi: 10.2174/1568009054629654. PMID: 16101384.
2. Yang S, Yuan Y, Ren W, Wang H, Zhao Z, Zhao H, Zhao Q, Chen X, Jiang X, Zhang L. MCM4 is a novel prognostic biomarker and promotes cancer cell growth in glioma. Front Oncol. 2022 Nov 17;12:1004324. doi: 10.3389/fonc.2022.1004324. PMID: 36465369; PMCID: PMC9713251.
3. Malysa A, Zhang XM, Bepler G. Minichromosome Maintenance Proteins: From DNA Replication to the DNA Damage Response. Cells. 2024 Dec 26;14(1):12. doi: 10.3390/cells14010012. PMID: 39791713; PMCID: PMC11719910.

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