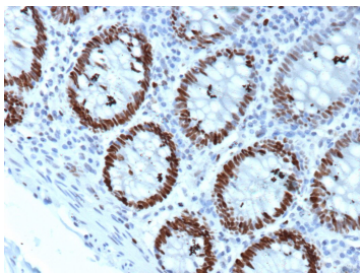
MCM4 Antibody / DNA replication licensing factor 4 [clone MCM4/3041] (V5941)

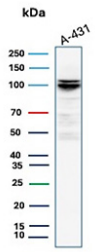
Catalog No.	Formulation	Size
V5941-100UG	0.2 mg/ml in 1X PBS with 0.05% BSA, 0.05% sodium azide	100 ug
V5941-20UG	0.2 mg/ml in 1X PBS with 0.05% BSA, 0.05% sodium azide	20 ug
V5941SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

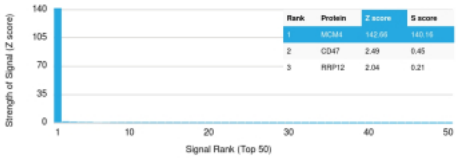
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1, kappa
Clone Name	MCM4/3041
UniProt	P33991
Localization	Nucleus
Applications	Immunohistochemistry (FFPE) : 1-2ug/ml Western Blot : 2-4ug/ml
Limitations	This MCM4/DNA replication licensing factor 4 antibody is available for research use only.



Immunohistochemistry staining of formalin-fixed, paraffin-embedded human colon with MCM4/DNA replication licensing factor 4 antibody (clone MCM4/3041). Strong nuclear brown staining is observed in proliferating epithelial cells lining the colonic glands, consistent with MCM4 as a replication licensing factor and proliferation-associated marker, while surrounding stromal cells show minimal to weak labeling. Heat-induced epitope retrieval was performed by boiling tissue sections in pH 9, 10mM Tris with 1mM EDTA for 20 min followed by cooling prior to staining.



Western blot analysis of MCM4/DNA replication licensing factor 4 antibody (clone MCM4/3041) in human A431 cell lysate. A prominent band is detected at approximately 100 kDa, corresponding to the predicted molecular weight of MCM4, with a characteristic doublet pattern consistent with different phosphorylation states of this cell cycleâ€“regulated protein.



Analysis of Protein Array containing more than 19,000 full-length human proteins using MCM4/DNA replication licensing factor 4 antibody (MCM4/3041). Z- and S- Score: The Z-score represents the strength of a signal that a monoclonal antibody (MAb) (in combination with a fluorescently-tagged anti-IgG secondary antibody) produces when binding to a particular protein on the HuProtTM array. Z-scores are described in units of standard deviations (SD's) above the mean value of all signals generated on that array. If targets on HuProtTM are arranged in descending order of the Z-score, the S-score is the difference (also in units of SD's) between the Z-score. S-score therefore represents the relative target specificity of a MAb to its intended target. A MAb is considered to specific to its intended target, if the MAb has an S-score of at least 2.5. For example, if a MAb binds to protein X with a Z-score of 43 and to protein Y with a Z-score of 14, then the S-score for the binding of that MAb to protein X is equal to 29.

Description

MCM4 Antibody recognizes DNA replication licensing factor 4, also known as Minichromosome maintenance complex component 4, a core subunit of the MCM2-7 helicase complex essential for eukaryotic DNA replication. The MCM4 gene encodes a nuclear protein that functions as part of the replicative helicase responsible for unwinding double-stranded DNA during S phase. MCM4 antibody is widely used as a marker of cell proliferation and replication competence in both research and diagnostic pathology settings. Clone MCM4/3041 specifically targets MCM4 and is suitable for detecting nuclear expression in actively cycling cells.

MCM4 is a critical component of the pre-replication complex, assembling with MCM2, MCM3, MCM5, MCM6, and MCM7 at replication origins during G1 phase. Upon activation by cyclin-dependent kinases and DDK, the MCM complex transitions into an active helicase that drives replication fork progression. DNA replication licensing factor 4 plays an essential role in maintaining genomic stability by ensuring that DNA replication occurs once per cell cycle. Because MCM4 is expressed in cells that are licensed to replicate, MCM4 antibody serves as a sensitive indicator of proliferative activity, often labeling a broader population of cycling cells than Ki-67.

In normal tissues, MCM4 expression is predominantly nuclear and enriched in basal or progenitor cell compartments where active proliferation occurs. In stratified epithelia, staining is typically observed in basal and parabasal layers, while differentiated superficial cells show reduced labeling. In lymphoid tissues, germinal centers display strong nuclear positivity consistent with rapid B-cell proliferation. MCM4 antibody is therefore useful for assessing growth fractions in a wide range of tissue types.

In cancer biology, overexpression of DNA replication licensing factor 4 has been documented in many solid tumors and hematologic malignancies. Increased nuclear MCM4 labeling correlates with high proliferative index and may be associated with aggressive tumor behavior. Because the MCM complex is required for replication initiation, dysregulation of MCM4 can contribute to replication stress and genomic instability, hallmarks of malignant transformation. MCM4 antibody clone MCM4/3041 provides a reliable tool for studying cell cycle dynamics, tumor proliferation, and replication licensing pathways in formalin-fixed, paraffin-embedded tissues.

Structurally, MCM4 contains conserved helicase domains characteristic of the AAA+ ATPase family and participates directly in ATP-dependent DNA unwinding. Its activity is tightly regulated by phosphorylation and interactions with other

replication factors. Detection of MCM4 using MCM4 antibody enables detailed investigation of DNA replication control mechanisms, S phase entry, and proliferative signaling in both normal and disease contexts.

Application Notes

Optimal dilution of the MCM4/DNA replication licensing factor 4 antibody should be determined by the researcher.

Immunogen

A recombinant fragment (around amino acids 600-800) of human MCM4 protein (exact sequence is proprietary) was used as the immunogen for the MCM4/DNA replication licensing factor 4 antibody.

Storage

MCM4/DNA replication licensing factor 4 antibody with sodium azide - store at 2 to 8oC; antibody without sodium azide - store at -20 to -80oC.