Revision 1

#5547 Store at -20C

SMC4 (D14E2) Rabbit mAb

Cell Signaling TECHNOLOGY®

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB, IP	H M R Mk	Endogenous	180	Rabbit IgG	#Q9NTJ3	10051

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:200

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Specificity / Sensitivity

SMC4 (D14E2) Rabbit mAb detects endogenous levels of total SMC4 protein. Based on sequence homology, the antibody does not cross-react with other SMC proteins, including SMC1, SMC2 and SMC3. A band of unknown origin is detected at around 48 kDa.

Species predicted to react based on 100% sequence homology:

Xenopus, Bovine

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Tyr95 of human SMC4 protein.

Background

Structural maintenance of chromosomes 2 (SMC2) and 4 (SMC4) proteins are subunits of the condensin complex, which enables chromosome condensation and maintains the compaction of chromosomes as they separate to opposite poles during anaphase (1-3). In addition to regulating chromosome condensation, condensin is a general regulator of chromosome architecture and may function to regulate gene expression and DNA repair. SMC proteins contain a hallmark bipartite ATPase domain of the ABC ATPase superfamily, which consists of an N-terminal Walker A motif nucleotide-binding domain and C-terminal Walker B motif catalytic domain that interact to form a functional ATPase (1-3). The two ATPase domains are connected by two coiled coil domains separated by a central hinge region that facilitates protein-protein interactions between partnering SMC proteins. In the case of the condensin complex, SMC2 and SMC4 interact to form a functional ATPase required for chromatin condensation; however, the mechanism by which this ATPase activity regulates chromsome architecture is still being determined. In addition to SMC proteins, condensin contains three auxiliary subunits, which function to regulate condensin ATPase activity. Higher eukaryotes contain two distinct condensin complexes (condensin I and II), both of which contain SMC2 and SMC4 (1-3). Condensin I also contains the auxiliary subunits CAP-D2, CAP-G and CAP-H, while condensin II contains the related auxiliary proteins CAP-D3, CAP-G2 and CAP-H2. The two condensin complexes show different localization patterns during the cell cycle and on chromosomes and both are required for successful mitosis, suggesting distinct functions for each complex (1-3).

Background References

1. Losada, A. and Hirano, T. (2005) *Genes Dev* 19, 1269-87.
2. Hudson, D.F. et al. (2009) *Chromosome Res* 17, 131-44.
3. Legagneux, V. et al. (2004) *Biol Cell* 96, 201-13.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster
X: Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse
GP: Guinea Pig **Rab:** rabbit **All:** all species expected

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