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Rad9A (D2J4P) Rabbit mAb**Cell Signaling**
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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
WB	H	Endogenous	60	Rabbit IgG	#Q99638	5883

Product Usage Information**Application**

Western Blotting

Dilution

1:1000

StorageSupplied 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**

Rad9A (D2J4P) Rabbit mAb recognizes endogenous levels of total Rad9A protein. Based on the amino acid sequence of the immunogenic peptide, this antibody is not expected to cross-react with Rad9B protein.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Pro31 of human Rad9A protein.

Background

DNA damage resulting from genotoxic stress activates cellular checkpoints that prevent or delay cell division until either damaged DNA is repaired or the cell follows an apoptotic pathway. The Rad9 homolog A (Rad9A, Rad9) protein is part of a checkpoint protein complex that acts as an early sensor of DNA damage. Together with the Hus1 and Rad1 checkpoint proteins, Rad9 forms a heterotrimeric 9-1-1 complex with a ring structure similar to the processivity factor PCNA. The 9-1-1 complex induces multiple signaling pathways, including the ATM and ATR-activated DNA repair pathways (1,2). A functional 9-1-1 complex is required for ATR-dependent S phase checkpoint signaling (3).

The 9-1-1 complex interacts with DNA topoisomerase 2-binding protein 1 (TopBP1) in response to DNA damage, activating ATR and causing signal amplification through further recruitment of TopBP1 (4). The 9-1-1 complex interacts with DNA mismatch repair proteins MSH2, MSH3, and MSH6 to play a role in mismatch repair (5). During an error-free DNA damage tolerance process, the 9-1-1 complex cooperates with polyubiquitinated PCNA and Exo1 nuclease to support switching of the replicative polymerase to the undamaged template (6).

Research studies indicate that the two Rad9 paralogues (Rad9A and Rad9B) can both functionally complement one another and display distinct biological functions. Specifically, Rad9B senses nucleolar stress and causes a delay in the cell cycle at G1/S phase (7).

Background References

1. Broustas, C.G. and Lieberman, H.B. (2012) *J Cell Biochem* 113, 742-51.
2. Kai, M. (2013) *Biomolecules* 3, 75-84.
3. Bao, S. et al. (2004) *Oncogene* 23, 5586-93.
4. Ohashi, E. et al. (2014) *DNA Repair (Amst)* 21, 1-11.
5. Bai, H. et al. (2010) *DNA Repair (Amst)* 9, 478-87.
6. Karras, G.I. et al. (2013) *Mol Cell* 49, 536-46.
7. Pérez-Castro, A.J. and Freire, R. (2012) *J Cell Sci* 125, 1152-64.

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 nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key**WB:** Western Blotting**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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