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orders@cellsignal.com

**Support:** 877-678-TECH (8324)

**Web:** info@cellsignal.com  
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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## Rad51 (D4B10) Rabbit mAb

For Research Use Only. Not for Use in Diagnostic Procedures.

<b>Applications:</b> W, IP	<b>Reactivity:</b> H M R Mk	<b>Sensitivity:</b> Endogenous	<b>MW (kDa):</b> 37	<b>Source/Isotype:</b> Rabbit IgG	<b>UniProt ID:</b> #Q06609	<b>Entrez-Gene Id:</b> 5888
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### Product Usage Information

#### Application

Western Blotting  
Immunoprecipitation

#### Dilution

1:1000  
1:100

### 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

Rad51 (D4B10) Rabbit mAb recognizes endogenous levels of total Rad51 protein.

### Source / Purification

Monoclonal antibody is produced by immunizing animals with recombinant protein specific to full-length human Rad51 protein. This antibody recognizes residues surrounding Leu140 of human Rad51.

### Background

DNA double-strand breaks (DSBs) are potentially hazardous lesions that can be induced by ionizing radiation (IR), radiomimetic chemicals, or DNA replication inhibitors. Cells sense and repair DSBs via two distinct but partly overlapping signaling pathways: nonhomologous end joining (NHEJ) and homologous recombination (HR). Research studies have shown that defects in both pathways are associated with human diseases, including cancer (reviewed in 1).

DSBs that arise during S or G2 phase are repaired via homologous recombination (HR), using the replicated sister chromatid as a repair template. Rad51 recombinase, a eukaryotic homolog of *E. coli* RecA, polymerizes and forms a filament along single-stranded DNA, mediating HR with the help of auxiliary proteins, including Rad54 and BRCA2 (reviewed in 2,3). BRCA2 binds Rad51 and targets it to single-stranded DNA, allowing it to displace replication protein A (RPA) (4). Five Rad51 paralogs exist in vertebrates (XRCC2, XRCC3, Rad51B, Rad51C, and Rad51D), and they all appear to be required for efficient HR (5).

Researchers have found that mutations in the *Rad51* gene may be related to breast cancer risk (6). Some studies have implicated Rad51 as a potential marker for pancreatic cancer (7).

### Background References

- Hartlerode, A.J. and Scully, R. (2009) *Biochem J* 423, 157-68.
- Sung, P. et al. (2003) *J Biol Chem* 278, 42729-32.
- Mazin, A.V. et al. (2010) *DNA Repair (Amst)* 9, 286-302.
- Jensen, R.B. et al. (2010) *Nature* 467, 678-83.
- Takata, M. et al. (2001) *Mol Cell Biol* 21, 2858-66.
- Antoniou, A.C. et al. (2007) *Am J Hum Genet* 81, 1186-200.
- Nagathihalli, N.S. and Nagaraju, G. (2011) *Biochim Biophys Acta* 1816, 209-18.

### 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

**W:** Western Blotting **IP:** Immunoprecipitation

### Cross-Reactivity Key

**H:** Human **M:** Mouse **R:** Rat **Mk:** Monkey

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