Revision 3

Store at -20C

#8344

MRN Complex Antibody Sampler Kit

1 Kit (5 x 20 microliters)

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355)
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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Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Mre11 (31H4) Rabbit mAb	4847	20 µl	81 kDa	Rabbit IgG
Phospho-Mre11 (Ser676) Antibody	4859	20 µl	81 kDa	Rabbit
Rad50 Antibody	3427	20 µl	153 kDa	Rabbit
Phospho-p95/NBS1 (Ser343) Antibody	3001	20 µl	95 kDa	Rabbit
p95/NBS1 (D6J5I) Rabbit mAb	14956	20 µl	95 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

MRN Complex Antibody Sampler Kit offers an economical way of detecting each target protein. The kit contains enough primary and secondary antibody to perform two western blot experiments with each primary antibody.

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.

Background

The Mre11-Rad50-Nbs1 (MRN) complex is a key mediator of genome maintenance, playing important roles in meiosis, telomere stability at the ends of chromosomes, and the cellular responses to DNA damage (1-5). Homodimers of the Mre11 and Rad50 subunits form a tetramer core that binds directly to DNA and associates with the Nbs1 subunit (6). The complex functions as a sensor of DNA damage and localizes to DNA double-strand breaks. At these DNA lesions, the MRN complex tethers DNA ends and processes free strands via the endonuclease and exonuclease activities of Mre11. In addition to stimulating both homologous recombination and nonhomologous end joining repair DNA pathways, MRN activates DNA damage checkpoint signaling cascades regulating cell cycle progression. In some contexts, MRN is required for ATM activation and downstream phosphorylation of p53, BRCA1, and Chk2 (7). ATM also phosphorylates Mre11, Rad50, and Nbs1 (also known as p95 and Nibrin). Notably, Nbs1 Ser343 and Mre11 Ser676 are phosphorylated by ATM. Phosphorylation modulates function and association with many mediators, some of which include 53BP1, RPA, hSSB1, TRF2, BRCA1, FANCD2, CtP1, Histone H2AX, MDC1, and WRN helicase. Each subunit is essential for mammalian embryonic development, as mice with homozygous-null mutations in Mre11, Nbs1, or Rad50 are lethal. Furthermore, MRN complex function is required in developing lymphocytes for antigen receptor gene recombination initiated by the Rag-1 and Rag-2 recombinases. In humans, Mre11 and Nbs1 mutations cause chromosomal instability and radiosensitivity and are associated with ataxia-telangiectasia-like disorder (ATLD) and Nijmegen breakage syndrome (NBS), respectively (8). Genomic instability and cancer have been shown to develop in cells with genetic mutations within MRN complex genes.

Background References

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7. Uziel, T. et al. (2003) *EMBO J* 22, 5612-21.
8. Zhao, S. et al. (2000) *Nature* 405, 473-7.

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