Revision 3

Store at -20°C
#9947

DNA Damage Antibody Sampler Kit

1 Kit (7 x 20 microliters)

Cell Signaling TECHNOLOGY®

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Support: 877-678-TECH (8324)

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

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Phospho-ATR (Ser428) Antibody	2853	20 µl	300 kDa	Rabbit
Phospho-BRCA1 (Ser1524) Antibody	9009	20 µl	220 kDa	Rabbit
Phospho-Chk2 (Thr68) (C13C1) Rabbit mAb	2197	20 µl	62 kDa	Rabbit IgG
Phospho-Chk1 (Ser345) (133D3) Rabbit mAb	2348	20 µl	56 kDa	Rabbit IgG
Phospho-Histone H2A.X (Ser139) (20E3) Rabbit mAb	9718	20 µl	15 kDa	Rabbit IgG
Phospho-p53 (Ser15) (16G8) Mouse mAb	9286	20 µl	53 kDa	Mouse IgG1
Phospho-ATM (Ser1981) (D6H9) Rabbit mAb	5883	20 µl	350 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat
Anti-mouse IgG, HRP-linked Antibody	7076	100 µl		Horse

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

Description

This kit provides an economical means to analyze major signaling checkpoints in response to DNA damage. The kit contains primary and secondary antibodies to perform two Western blots with each 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

Ataxia telangiectasia mutated kinase (ATM) and ataxia telangiectasia and Rad3-related kinase (ATR) are PI3 Kinase-related kinase (PIKK) family members that phosphorylate multiple substrates on serine or threonine residues that are followed by a glutamine in response to DNA damage or replication blocks (1-3). p53 is phosphorylated by ATM, ATR and DNA-PK at Ser15. This phosphorylation impairs the ability of MDM2 to bind p53, promoting both the accumulation and activation of p53 in response to DNA damage (4,5). Chk1 and Chk2, downstream protein kinases of ATM/ATR, plays an important role in DNA damage checkpoint control, embryonic development and tumor suppression (6). Chk1 is phosphorylated at Ser280 and Ser296 following DNA damage. The amino-terminal domain of Chk2 contains a series of seven serine or threonine residues, including Thr68, each followed by glutamine (SQ or TQ motif). After DNA damage by ionizing radiation (IR), UV irradiation or hydroxyurea treatment, Thr68 and other sites in this region become phosphorylated by ATM/ATR (7-9). The breast cancer susceptibility proteins BRCA1 and BRCA2 are frequently mutated in cases of hereditary breast and ovarian cancers and have roles in multiple processes related to DNA damage, repair, cell cycle progression, transcription, ubiquitination and apoptosis. Numerous DNA-damage induced phosphorylation sites on BRCA1 have been identified, including serine 1524, and kinases activated in a cell cycle-dependent manner, including Aurora A and CDK2, can also phosphorylate BRCA1. IR, DNA and radiometric-induced DNA damage also results in rapid phosphorylation of the histone H2A family member H2A.X at Ser139 by ATM (10,11). Within minutes following DNA damage, Ser139-phosphorylated H2A.X localizes to sites of DNA damage at subnuclear foci (12).

Background References

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Limited Uses