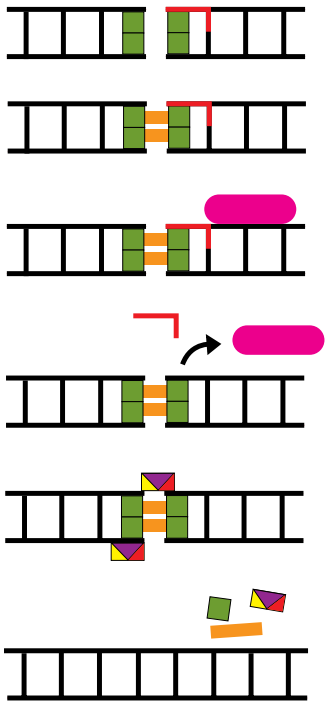
Non-Homologous End Joining Antibodies

Non-homologous end joining (NHEJ) is a mechanism that can be used to repair double-strand breaks in DNA. NHEJ involves directly ligating break ends without the need for a homologous template, whereas homologous recombination requires a homologous sequence to guide repair. NHEJ is evolutionarily conserved throughout all kingdoms of life and is the predominant double-strand break repair pathway in many organisms, including higher eukaryotes such as human and mouse. NHEJ typically utilizes short homologous DNA sequences, termed microhomologies, to guide repair. Microhomologies, located in the single-stranded overhangs often present on the ends of double-strand breaks, are used to promote restorative repair. When these overhangs are compatible, NHEJ almost always repairs the break accurately with no sequence loss. Imprecise repair leading to loss of nucleotides can also occur but is much less common. Nevertheless, NHEJ is often referred to as an "error-prone" repair mechanism. NHEJ can lead to translocations when organisms are subjected to large doses of radiation that cause many breaks per cell. Additionally, the NHEJ pathway is responsible for fusing the ends of chromosomes that have undergone telomere failure. These translocations may result in incorrect gene regulation and can lead to pathological conditions.

Catalog#	Product	Host	Type	Application	Species
NB100-183	Artemis	Rabbit	Polyclonal	WB	Hu
NB100-542	Artemis	Rabbit	Polyclonal	WB	Hu
NB100-78405	Artemis	Rabbit	Polyclonal	IF, WB	Hu
NB110-57379	DNA Ligase IV	Rabbit	Polyclonal	ELISA, WB, IHC-P	Hu
H00003981-M02	DNA Ligase IV (2D2)	Mouse	Monoclonal	ELISA, WB	Hu
NBP1-02456	DNA PKcs [Thr2609]	Rabbit	Polyclonal	ELISA, IF, IHC-P, IP, WB	Ca, Ch, Eq, Hu, Mu, Rt
H00005591-M02	DNA PKcs (1B9)	Mouse	Monoclonal	WB, ELISA, IHC-P	Hu
NB110-56935	DNA PKcs (Y393)	Rabbit	Monoclonal	WB, ICC, IHC	Hu
NB100-336	Ku70	Mouse	Polyclonal	WB	Hu
NB100-1915	Ku70 (N3H10)	Mouse	Monoclonal	IHC-P, IF ,IP ,WB	Ha, Hu, Mu, Mk, Xp
NB100-335	Ku70	Rabbit	Polyclonal	WB	Hu
NB100-349	Ku70 (1.5)	Mouse	Monoclonal	WB	Hu
NB100-103	Ku80 (5D5.8)	Mouse	Monoclonal	WB	Hu
NB100-337	Ku80 (9403)	Mouse	Monoclonal	WB	Hu
NB100-503	Ku80	Rabbit	Polyclonal	WB	Hu, Mu, Ha, Rt
NB100-508	Ku80	Rabbit	Polyclonal	WB	Hu, Ha, Mu, Rt
NB100-2840	Ku80	Goat	Polyclonal	PEP-ELISA, WB	Hu
NBP1-02829	Ku80 (F3)	Mouse	Monoclonal	IF, IHC-P, WB	Hu
NB100-2258	XLF	Rabbit	Polyclonal	IP, WB	Hu
NB100-170	XRCC4	Rabbit	Polyclonal	WB	Hu
NB600-702	XRCC4	Rabbit	Polyclonal	WB	Hu, Rt
NB100-343	XRCC4	Mouse	Polyclonal	IF, WB	Hu

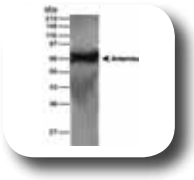
Featured Product



Pathway Description: Ku70/80 binds to DNA ends and recruits other NHEJ proteins to the break. DNAPKcs activate nucleases via phosphorylation to repair any damaged DNA. Finally, the repaired DNA is ligated by the XRCC4/Ligase IV complex to complete the re-closure of the DNA break.

SAMPLE SIZES AVAILABLE

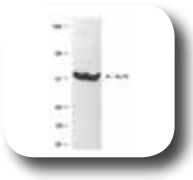
Artemis Antibody
NB100-183



Western blot analysis of human testis lysate using NB100-183.

Species: Hu
Applications: WB

Ku70 Antibody
NB100-336



Western blot analysis of HeLa cell lysate using NB100-336.

Species: Hu
Applications: WB

[Ku70 Antibody NB100-336] Kong X, et al. Comparative analysis of different laser systems to study cellular responses to DNA damage in mammalian cells. Nucleic Acids Res. 2009 May;37(9):e68. [PMID: 19357094]

Homologous Recombination Antibodies

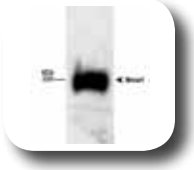
Double-Strand Breaks (DSBs) are perhaps the most significant form of DNA damage because they pose problems for transcription, replication, and chromosome segregation. DSBs differ from most other types of DNA lesions in that they affect both strands of the DNA duplex, thereby preventing the use of the complementary strand as a template for repair. Failure to repair these defects can result in chromosomal instabilities, leading to deregulated gene expression and carcinogenesis. To counteract the effects of these potential lesions, cells have evolved two distinct pathways of DSB repair, Homologous Recombination (HR) and Non-Homologous End Joining (NHEJ). HR repairs a DSB by copying the missing information from the sister chromatid or homologous chromosome, yielding exact restoration of the DNA.

Catalog#	Product	Host	Type	Application	Species
NB100-199	BRCA1	Rabbit	Polyclonal	IP, WB	Hu
NB100-598	BRCA1 (RAY)	Mouse	Monoclonal	IF, IP, WB	Hu
NB100-600	BRCA1 (MU)	Mouse	Monoclonal	IF, IP, WB	Hu
NB100-91680	BRCA1	Rabbit	Polyclonal	ELISA, IHC-P	Hu, Mu
NB100-404	BRCA1 (6B4)	Mouse	Monoclonal	IP, WB	Hu
NB100-229	BRCA1 [Ser1189]	Rabbit	Polyclonal	WB	Hu
NB100-225	BRCA1 [Ser1387]	Rabbit	Polyclonal	WB	Hu
NB100-226	BRCA1 [Ser1423]	Rabbit	Polyclonal	FACS, WB	Hu, Mu
NB100-227	BRCA1 [Ser1457]	Rabbit	Polyclonal	IP, WB	Hu
NB100-228	BRCA1 [Ser1466]	Rabbit	Polyclonal	WB	Hu
NB100-200	BRCA1 [Ser1524]	Rabbit	Polyclonal	IP, WB	Hu
NBP1-18283	BRCA2	Rabbit	Polyclonal	IHC, WB	Hu, Mu, Rt
NB100-181	DMC1 (1D12/4)	Mouse	Monoclonal	WB	Hu
NB100-2617	DMC1 (2H12/4)	Mouse	Monoclonal	IF, IP, WB	Hu, Mu, Rt, Bv
NB100-2687	DMC1 (5B10/2)	Mouse	Monoclonal	IP, WB	Hu
NB100-2627	EME1 (mta317h2/1)	Mouse	Monoclonal	WB	Hu
NB100-142	Mre11	Rabbit	Polyclonal	IF, IP, WB	Hu, Mu
NB100-276	Mre11	Rabbit	Polyclonal	WB	Hu
NB100-80869	Mre11	Rabbit	Polyclonal	ELISA, IF, IHC-P, WB	Am, Bv, Ca, Ch, Hu, Mk, Mu, Rt, Ze
NB100-473	Mre11 (12D7)	Mouse	Monoclonal	WB, IP, IF, IHC-P	Hu
NB100-143	NBS1	Rabbit	Polyclonal	ICC, IP, IF, WB	Hu, Mk, Mu
NB100-60648	NBS1	Rabbit	Polyclonal	IP, WB	Mu
NB100-221	NBS1 (1D7)	Mouse	Monoclonal	WB, IP	Hu
NB110-10873	NBS1	Rabbit	Polyclonal	WB, IHC	Hu, Mu, Rt
NBP1-06705	NBS1	Rabbit	Polyclonal	IHC-P, WB	Hu, Mu
NB100-222	NBS1 (1C3)	Mouse	Monoclonal	WB, IP	Hu
NB110-57272	NBS1 (Y112)	Rabbit	Monoclonal	ICC, IHC, IP, WB	Hu, Mu

Featured Product

Featured Product

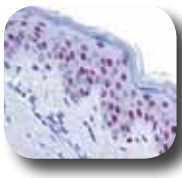
BRCA1 Antibody
NB100-199



IP/Western blot of HeLa cell lysates using NB100-199.

Species: Hu
Applications: WB, IP

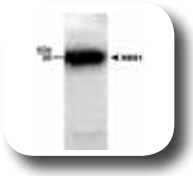
Mre11 Antibody
NB100-142



Immuno-histochemical analysis of human epidermis using NB100-142.

Species: Hu, Mu
Applications: WB, IP, IF

NBS1 Antibody
NB100-143



Western blot analysis of HeLa cell lysates using NB100-143.

Species: Hu, Mu, Mk
Applications: ICC, IF, IP, WB

SAMPLE SIZES AVAILABLE

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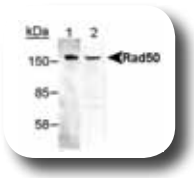
Homologous Recombination Antibodies

Rad50 Antibody
NB100-1487



Western blot analysis of HeLa cell lysate using NB100-1487.

Species: Hu
Applications: WB, IP

Rad51 (14B4) Antibody
NB100-148

Western blot analysis of T24 bladder carcinoma using NB100-148.

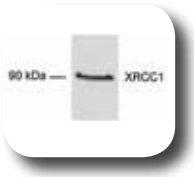
Species: Hu
Applications: WB, IP, IF

Rad52 Antibody
NB100-2343

IP/Western blot analysis of HeLa cell lysate uisng NB100-2343.

Species: Hu
Applications: IP, WB

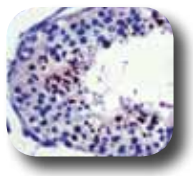
XRCC1 Antibody
NB100-202



Western blot analysis of HeLa Nuclear Cell Extract using NB100-202.

Species: Hu
Applications: WB, IP, ICC

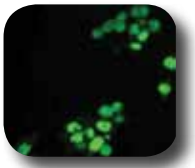
XRCC2 Antibody
NB120-2367



Immuno-histochemical analysis of human testis using NB120-2367.

Species: Hu
Applications: IHC-Fr, IHC-P, WB

XRCC4 Antibody
NB100-343



Immuno-fluorescent analysis of human HCT116 cells using NB100-343.

Species: Hu
Applications: IF, WB

Catalog #	Product	Host	Type	Application	Species
NB100-154	Rad50	Rabbit	Polyclonal	IP, WB	Hu, Mu
NB100-1488	Rad50	Rabbit	Polyclonal	WB, IP	Hu
NB100-2601	Rad50	Rabbit	Polyclonal	IHC	Hu, Mu
NBP1-02926	Rad50 (1D7)	Mouse	Monoclonal	IHC-P, IP, WB	Hu
NB100-147	Rad50 (13B3)	Mouse	Monoclonal	WB, IF	Hu
NB100-1487	Rad50	Rabbit	Polyclonal	WB, IP	Hu
NB100-499	Rad51 (13E4)	Mouse	Monoclonal	WB	Hu
NB100-148	Rad51 (14B4)	Mouse	Monoclonal	WB, IP, IF	Hu
H00005888-M01	Rad51 (2E5-E5)	Mouse	Monoclonal	WB, ELISA	Hu
29480002	Rad51	Rabbit	Polyclonal	ELISA	Ce
NB100-176	Rad51L1 (1 H3/13)	Mouse	Monoclonal	WB	Hu
NB110-10042	Rad51L1 (RAD51B/1E11/6)	Mouse	Monoclonal	ELISA, IA, WB	Hu
NB100-1127	Rad51C	Goat	Polyclonal	WB	Hu
NB100-177	Rad51C (2H11/6)	Mouse	Monoclonal	WB	Hu, Mu
H00005889-M01	Rad51C (3F3-5C6)	Mouse	Monoclonal	ELISA, IF, RNAi, WB	Hu
H00005892-M01	Rad51D (1C8-3C11)	Mouse	Monoclonal	WB, ELISA	Hu
NB100-166	Rad51D	Rabbit	Polyclonal	WB	Hu
NB300-968	Rad51D	Goat	Polyclonal	WB, PEP-ELISA	Hu
NB100-178	Rad51D (5B3/6)	Mouse	Monoclonal	WB, IF	Hu
NB100-1128	Rad51L1	Goat	Polyclonal	WB, PEP-ELISA	Hu
NB100-2342	Rad52	Rabbit	Polyclonal	IP	Hu
NB100-2343	Rad52	Rabbit	Polyclonal	IP, WB	Hu
NB110-13364	Rad54 (4E3/1)	Mouse	Monoclonal	WB	Hu
H00025788-M01	Rad54B (4A7)	Mouse	Monoclonal	ELISA, IF, WB	Hu
H00008438-M01	Rad54L (4G2)	Mouse	Monoclonal	ELISA, WB	Hu
NB100-1406	SIRT4	Goat	Polyclonal	ELISA, IHC, WB	Hu
NB100-202	XRCC1	Rabbit	Polyclonal	WB, IP, ICC	Hu
NB120-1838	XRCC1 (33-2-5)	Mouse	Monoclonal	ICC, IHC	Hu, Rt
NB100-169	XRCC1	Rabbit	Polyclonal	WB, IP, IHC, ELISA	Hu
NB600-437	XRCC1 (Agarose Immobolized)	Rabbit	Polyclonal	IP	Hu
NB100-533	XRCC1 [phosphoSer461]	Rabbit	Polyclonal	WB	Hu
NB100-540	XRCC1 [phosphoSer475]	Rabbit	Polyclonal	WB	Hu
NB100-532	XRCC1 [Ser518/Thr519/Thr523]	Rabbit	Polyclonal	WB	Hu
NB120-2367	XRCC2	Rabbit	Polyclonal	IHC-Fr, IHC-P, WB	Hu
NB100-165	XRCC3	Rabbit	Polyclonal	WB	Hu
NB100-2205	XRCC3	Rabbit	Polyclonal	IHC, IP, WB	Hu, Mu, Rt
NB100-180	XRCC3 (10F1/6)	Mouse	Monoclonal	WB	Bv, Hu, Mk, Rt, Sh
NB100-170	XRCC4	Rabbit	Polyclonal	WB	Hu
NB600-702	XRCC4	Rabbit	Polyclonal	WB	Hu, Rt
NB100-343	XRCC4	Mouse	Polyclonal	IF, WB	Hu

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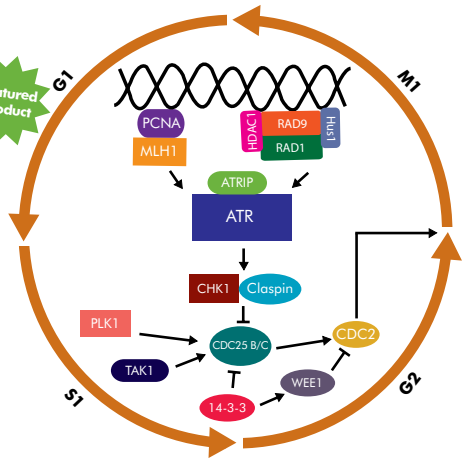
Checkpoint Signaling & Double Strand Break (DSB) Repair Antibodies

The genomes of mammalian cells are under continuous assault by environmental agents (e.g., UV light and reactive chemicals) as well as the byproducts of normal intracellular metabolism (e.g., reactive oxygen intermediates and inaccurately replicated DNA). Whatever the origin, genetic damage threatens cell survival and leads to organ failure, immunodeficiency, cancer, and other pathologies sequelae. To ensure that cells pass accurate copies of their genomes on to the next generation, evolution has overlaid the core cell-cycle machinery with a series of surveillance pathways termed cell-cycle checkpoints. These checkpoints detect damaged or abnormally structured DNA and coordinate cell-cycle progression with DNA repair. Typically, cell-cycle checkpoint activation slows or arrests cell-cycle progression, thereby allowing time for appropriate repair mechanisms to correct genetic lesions before they are passed on to the next generation of daughter cells.

Catalog#	Product	Host	Type	Application	Species
NB100-305	53BP1	Rabbit	Polyclonal	ICC, IF, WB	Hu, Mu
NB100-304	53BP1	Rabbit	Polyclonal	FACS, ICC , WB	Hu, Mu
NB100-904	53BP1	Rabbit	Polyclonal	ICC, WB	Hu, Mu
NB100-1803	53BP1 [phospho Ser25]	Rabbit	Polyclonal	FACS, IP, WB	Hu, Mu
NBP1-19447	53BP1	Rabbit	Polyclonal	IF, IHC-P, WB	Hu, Mu, Rt
NB100-104	ATM	Rabbit	Polyclonal	IF, IHC, IP , WB	Hu
NB100-270	ATM	Goat	Polyclonal	WB, IP	Hu, Mu
NB100-271	ATM	Goat	Polyclonal	ICC, IHC, IP, WB	Hu, Mu
NB100-1638	ATM	Rabbit	Polyclonal	WB, IHC	Ha, Hu, Mu, Mk
NB100-678	ATM	Rabbit	Polyclonal	IP, WB	Hu
NB100-1825	ATM	Rabbit	Polyclonal	IHC	Hu
NBP1-41736	ATM	Rabbit	Polyclonal	WB	Hu, Mu
NB600-621	ATM (10H11.E12) [phospho Ser1981]	Mouse	Monoclonal	ELISA, IF, WB	Hu, Mu
NB100-309	ATM (2C1)	Mouse	Monoclonal	IF, IHC, IP, WB	Hu, Mu, Mk, Rt
NB100-219	ATM (3E8)	Mouse	Monoclonal	IP, WB	Hu, Mu, Mk, Rt
NB100-220	ATM (5C2)	Mouse	Monoclonal	IF, WB	Hu, Mu, Mk, Rt
NB600-622	ATM (7C10D8) [phospho Ser1981]	Mouse	Monoclonal	IHC, IF, IP, WB	Hu, Mu
NB600-398	ATM [Agarose Immobolized]	Goat	Polyclonal	IP	Hu, Mu
NB600-399	ATM [Agarose Immobolized]	Goat	Polyclonal	IP	Hu, Mu
NB600-569	ATM (SYR6D4)	Mouse	Monoclonal	IHC	Hu, Mu
NB110-55475	ATM (Y170) [phosphoSer1981]	Rabbit	Monoclonal	IHC, IP, WB, ICC	Hu
NB100-1679	ATM	Rabbit	Polyclonal	WB, IF	Hu
NB300-585	ATR	Rabbit	Polyclonal	IF, IP, WB	Hu
NB100-322	ATR	Rabbit	Polyclonal	WB	Hu, Mu
NB100-323	ATR	Rabbit	Polyclonal	WB	Hu, Mu
NB100-308	ATR (2B5)	Mouse	Monoclonal	IF, IP, WB	Hu
NB100-359	ATRIP	Rabbit	Polyclonal	WB, IP	Hu
NB100-2115	ATRIP	Rabbit	Polyclonal	WB, IP	Hu
NBP1-19365	ATRIP	Rabbit	Polyclonal	IF, IHC-P, WB	Hu, Mu, Rt
NB100-57483	ATRX	Rabbit	Polyclonal	WB, IP	Hu
NB100-60685	ATRX	Rabbit	Polyclonal	IHC, IHC-P	Hu
H00000546-M01	ATRX (3C9)	Mouse	Monoclonal	ELISA, WB	Hu
NB100-212	Aurora A	Rabbit	Polyclonal	ICC, IF, IHC, IP	Hu
NB100-267	Aurora A	Rabbit	Polyclonal	IF, IHC, IP, WB	Hu
NB100-635	Aurora A	Rabbit	Polyclonal	WB, IF	Mu, Rt
NB100-779	Aurora A	Goat	Polyclonal	PEP-ELISA, WB	Hu

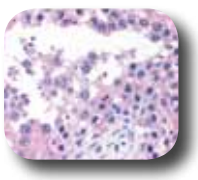
Featured Product

ATR & Checkpoint Signaling



Pathway Description: Activation of the cell cycle checkpoint signaling pathway occurs as a result of DNA damage. The damage materializes as replication fork stalling or UV induced DNA dimerization. Damage sensed by the 911 complex or PCNA activates ATR. The activation of ATR blocks the action of CDC25B/C and prevents the progression of the cell cycle from G2 to M phase.

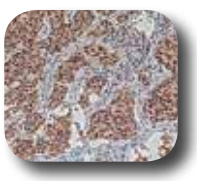
ATM Antibody
NB100-104



Species: Hu
Applications: IF, IHC, IP, WB

Immunohistochemical analysis of testis, seminiferous tubule using NB100-104.

Aurora A Antibody
NB100-212



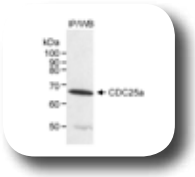
Species: Hu
Applications: ICC, IF, IHC, IP

Immunohistochemical analysis of human pancreatic tumor tissue using NB100-212.

Checkpoint Signaling & DSB Repair Antibodies

Catalog#	Product	Host	Type	Application	Species
NB100-1641	Aurora A (35C1)	Mouse	Monoclonal	ELISA, IF, IP, WB, ICC	Hu, Mu
NB100-1829	Aurora A (35C1) [Biotin]	Mouse	Monoclonal	IF, WB	Hu, Mu
NB100-2371	Aurora A [phospo Thr288]	Rabbit	Polyclonal	IF, ICC	Hu
	BRCA1	See Homologous Recombination (Page 3)			
NB100-213	CDC25A	Rabbit	Polyclonal	WB, IP	Hu
NB100-269	CDC25A	Rabbit	Polyclonal	WB, IP	Hu
NB600-418 / 419	CDC25A [Agarose Immoblized]	Rabbit	Polyclonal	IP	Hu
NB120-2357	CDC25A (DCS-120+DCS-121)	Mouse	Monoclonal	IHC-Fr, IHC-P, IP, WB	Hu, Rt
DM337	CDC25A (DCS-120+DCS-121)	Mouse	Monoclonal	IF, IHC-P, IP, WB	Hu
NB100-274	CHK1	Goat	Polyclonal	WB	Hu
NB100-275	CHK1	Rabbit	Polyclonal	WB	Hu
NB100-311	CHK1	Goat	Polyclonal	WB, IP	Hu
NB100-464	CHK1	Rabbit	Polyclonal	WB, IP	Hu
NB100-1734	CHK1	Rabbit	Polyclonal	IHC	Hu, Mu
NB100-2373	CHK1 [phospho Ser317]	Rabbit	Polyclonal	IHC	Hu
NB100-1768	CHK1 (2G11D5)	Rabbit	Monoclonal	WB, ELISA	Hu
NB110-55718	CHK1 (E250)	Rabbit	Monoclonal	ICC, WB	Hu, Mu
NB110-55717	CHK1 (EP691Y)	Rabbit	Monoclonal	FACS, IHC, WB, ICC	Hu
NB100-92500	CHK1 [phospho Ser345]	Rabbit	Polyclonal	ELISA, IHC-P	Hu, Mu, Rt
NB100-1707	CHK2	Rabbit	Polyclonal	IP	Hu
NB100-1709	CHK2	Rabbit	Polyclonal	WB, IP	Hu
NB100-500	CHK2 (8F12)	Mouse	Monoclonal	WB	Hu
NB100-92502	CHK2 [phospho Thr68]	Rabbit	Polyclonal	ELISA, IHC-P, WB	Hu, Mu
NB110-55719	CHK2 (E126) [phospho Thr68]	Rabbit	Monoclonal	IP, WB, ICC	Hu
NB110-55720	CHK2 (Y171) [phospho Thr68]	Rabbit	Monoclonal	IP, WB	Hu
NB110-57379	DNA Ligase IV	Rabbit	Polyclonal	WB, IHC-P, ELISA	Hu
NB100-384	gamma-H2AX [Ser139]	Rabbit	Polyclonal	ICC, FACS, WB	Hu, Mu
NB100-2241	HDAC1	Rabbit	Polyclonal	WB, IP	Hu, Mu
NB500-124	HDAC1	Rabbit	Polyclonal	ChIP, ICC, IF, IHC, IP, WB	Hu, Mu, Rt
H00003065-M06	HDAC1 (1D6)	Mouse	Monoclonal	ELISA, IF, IHC-P, WB	Hu
H00003065-M02	HDAC1 (3E1)	Mouse	Monoclonal	ELISA, IF, IHC-P, WB	Hu
H00003065-M11	HDAC1 (5A11)	Mouse	Monoclonal	ELISA, IHC-P, IF, WB	Hu
H00003065-M14	HDAC1 (5C11)	Mouse	Monoclonal	ELISA, WB, IF, IHC-P	Hu
NB120-12168	HDAC1 (HDAC1-21)	Mouse	Monoclonal	ELISA, IP, WB	Hu, Mu
	Ku 70	See Non-Homologous End Joining (Page 2)			
	Ku 80	See Non-Homologous End Joining (Page 2)			
NB100-197	MLH1	Rabbit	Polyclonal	IHC, IP, WB	Hu
NB600-423	MLH1 [Agarose Immobalized]	Rabbit	Polyclonal	IP	Hu
H00004292-M02	MLH1 (M1)	Mouse	Monoclonal	IF, IHC-P, ELISA, WB	Hu
	MRE11	See Homologous Recombination (Page 3)			
	NBS1	See Homologous Recombination (Page 3)			
NB500-321	p53 (BP53-12)	Mouse	Monoclonal	ELISA , IHC-P, IP , WB , ICC	Hu, Mk
NB500-356	p53 (BP53-12) [FITC]	Mouse	Monoclonal	FACS, ICC, IHC, WB	Mu
NB200-103	p53 (PAb 240)	Mouse	Monoclonal	ELISA, FACS, IP, IHC-P, WB	Hu, Mu, Rt
NB100-1913	p53 [Ser15]	Rabbit	Polyclonal	WB, IP, IHC	Hu, Mu, Rt
NB110-66663	p53 (EP42Y) [Ser46]	Rabbit	Monoclonal	ICC, IHC, IP, WB	Hu
NB200-156	p53 [Ser392]	Rabbit	Polyclonal	WB	Hu, Mk
NB120-8105	p53R2	Rabbit	Polyclonal	WB	Hu, Mu, Rt

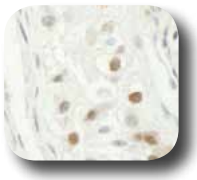
CDC25A Antibody
NB100-213



IP/Western blot analysis of HeLa nuclear extracts using NB100-213.

Species: Hu
Applications: WB, IP

CHK1 Antibody
NB100-1734



Immuno-histochemical analysis of human testis using NB100-1734.

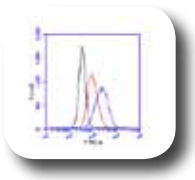
Species: Hu, Mu
Applications: IHC

CHK2 Antibody
NB100-1707

IP/Western blot analysis of HeLa cell lysates using NB100-1707.

Species: Hu
Applications: IP

gamma H2AX [Ser139] Antibody
NB100-384



Flow Cytometrical analysis of gamma-H2AX in etoposide treated Jurkat cells using NB100-304.

Species: Hu, Mu
Applications: ICC, FACS, WB

MLH1 Antibody
NB100-197

Western blot analysis of MLH1 on HeLa nuclear extracts using NB100-197.

Species: Hu
Applications: IHC, IP, WB

p53 [Ser15] Antibody
NB100-1913

Western blot analysis of extract from UV treated (lane 2) and untreated (Lane 1) HeLa cells using NB100-1913.

Species: Hu, Mu, Rt
Applications: WB, IP, IHC

Checkpoint Signaling & DSB Repair Antibodies

Catalog#	Product	Host	Type	Application	Species
NB500-231	PERP	Rabbit	Polyclonal	WB	Hu
NB100-546	PLK1	Rabbit	Polyclonal	IP, WB	Hu
NB100-548	PLK1	Rabbit	Polyclonal	IP, WB	Hu
NBP1-02760	PLK1 [phosphoThr210]	Rabbit	Polyclonal	ELISA, IHC-P, WB	Hu
H00005347-M01	PLK1 (2G12)	Mouse	Monoclonal	ELISA, IF, WB	Hu
H00005347-M02	PLK1 (3F10)	Mouse	Monoclonal	ELISA, WB	Hu
H00005347-M04	PLK1 (4G11)	Mouse	Monoclonal	ELISA, IF, WB	Hu
NB100-1497	PP2A alpha	Goat	Polyclonal	PEP-ELISA, WB	Hu
NB100-2259	PP2A alpha	Rabbit	Polyclonal	WB	Hu, Mu
NB100-2260	PP2A alpha	Rabbit	Polyclonal	WB, IP	Hu, Mu
NB100-501	PPP2R5C (TQ11-1G6)	Mouse	Monoclonal	WB, IP	Hu, Mu
NB110-57432	PP2A alpha (E155) [phosphoTyr301]	Rabbit	Monoclonal	ICC, IHC, IP, WB	Hu, Rt
NB110-57430	PP2A alpha (Y119)	Rabbit	Monoclonal	IHC, IP, WB, ICC	Hu, Mu, Rt
NB110-57431	PP2A alpha (YE351)	Rabbit	Monoclonal	IHC, WB	Hu, Mu, Rt
H00005591-M02	DNA PKcs (1B9)	Mouse	Monoclonal	ELISA , IHC-P, WB	Hu
NB110-56935	DNA PKcs (Y393)	Rabbit	Monoclonal	IHC, WB, ICC	Hu
NB100-660	DNA PKcs	Rabbit	Polyclonal	IP, WB	Hu
NB100-657	DNA PKcs	Rabbit	Polyclonal	IP, WB	Hu
NB500-230	PUMA	Rabbit	Polyclonal	WB	Hu
NBP1-02952	PUMA	Rabbit	Polyclonal	ICC, IHC-P, WB	Hu, Mu
NB100-173	Rad17	Rabbit	Polyclonal	WB	Hu
NB100-172	Rad17	Rabbit	Polyclonal	WB	Ye
NB100-272	Rad17	Goat	Polyclonal	WB	Hu
NB100-2760	Rad17 (1C6/2)	Mouse	Monoclonal	WB	Ye
H00005884-M01	Rad17 (2G12)	Mouse	Monoclonal	ELISA, WB	Hu
NB100-273	Rad17 [phospho Ser645]	Rabbit	Polyclonal	WB	Hu
NB100-56386	Rad17 [phospho Ser647]	Rabbit	Polyclonal	WB	Mu
	Rad50	See Homologous Recombination (Page 4)			
	Rad51	See Homologous Recombination (Page 4)			
NB100-159	RPA14 (11.1)	Mouse	Monoclonal	WB, IP	Hu, Mu
NB100-160	RPA14 (14.1)	Mouse	Monoclonal	ELISA, IP, WB	Hu, Mu
NB100-157	RPA2	Mouse	Polyclonal	WB	Hu
NB100-158	RPA2 (12F3.3)	Mouse	Monoclonal	WB, IP	Hu, Mu
NB600-565	RPA2 (9H8)	Mouse	Monoclonal	IHC-Fr, IHC-P, IP, IF, WB	Hu
NB100-204	SMC1	Rabbit	Polyclonal	IP, IF, WB	Hu, Mu, Xp
NB100-1755	SMC1	Rabbit	Polyclonal	IHC	Hu, Mu
NB600-433	SMC1 [Agarose Immobalized]	Rabbit	Polyclonal	IP	Hu
NB100-205	SMC1 [phoshop Ser957]	Rabbit	Polyclonal	WB, IP	Hu
NB100-206	SMC1 [Ser966]	Rabbit	Polyclonal	FACS, IP, WB	Hu
NB100-1754	SMC1 [phospho Ser966]	Rabbit	Polyclonal	IHC	Hu, Mu
H00008243-M01	SMC1 (1B9)	Mouse	Monoclonal	ELISA, WB, IHC-P	Hu
H00007465-M01A	Wee1 (5B6)	Mouse	Monoclonal	ELISA, WB	Hu
	XRCC4	See Homologous Recombination (Page 4)			

Featured Product

PP2A alpha Antibody
NB100-1497

Species: Hu
Applications: PEP-ELISA, WB

Western blot analysis of human lymph node lysate using NB100-1497.

PUMA Antibody
NB500-261

Species: Hu
Applications: WB

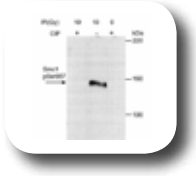
Western blot analysis of PUMA in HL-60 whole cell lysate using NB500-261.

Rad17 [phospho Ser645] Antibody
NB100-273

Species: Hu
Applications: WB

Western blot analysis of human Phospho-Rad17 using NB100-273.

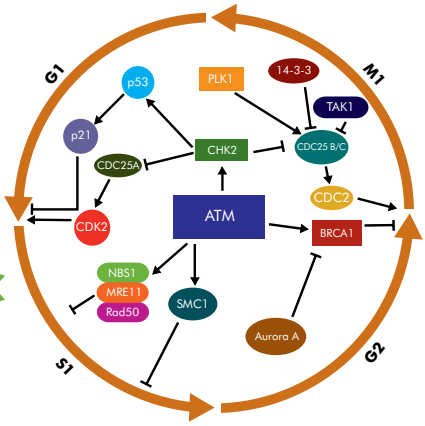
SMC1 [phospho Ser957] Antibody
NB100-205



Species: Hu
Applications: WB, IP

Western blot analysis of SMC1 on HeLa whole cell extracts using NB100-205.

ATM Kinase & Checkpoint Signaling



Pathway Description: ATM kinase is capable of regulating cell cycle progression in response to DNA damage at multiple points. Activation of CHK2 and CDC25A is able to prevent the G1 to S transition. The action of the MRN complex and SMC1 act to prevent progression of S phase. Prevention of mitosis by ATM signaling occurs via the action of BRCA1 and inhibition of CDC25B/C.

Can't Decide? Try a SuperNovus Pack:

NB100-926 • 53BP1 SuperNovus Pack • Includes 2 anti-53BP1 antibodies
NB100-915 • ATM SuperNovus Pack • Includes 3 anti-ATM antibodies
NB100-916 • ATR SuperNovus Pack • Includes 2 anti-ATR antibodies
NB100-917 • Aurora A SuperNovus Pack • Includes 2 anti-Aurora A antibodies
NB100-921 • CD22 SuperNovus Pack • Includes 2 anti-Cdc25A antibodies
NB100-949 • DNA PKcs SuperNovus Pack • Includes 4 anti-DNA PKcs antibodies

Base Excision Repair Antibodies

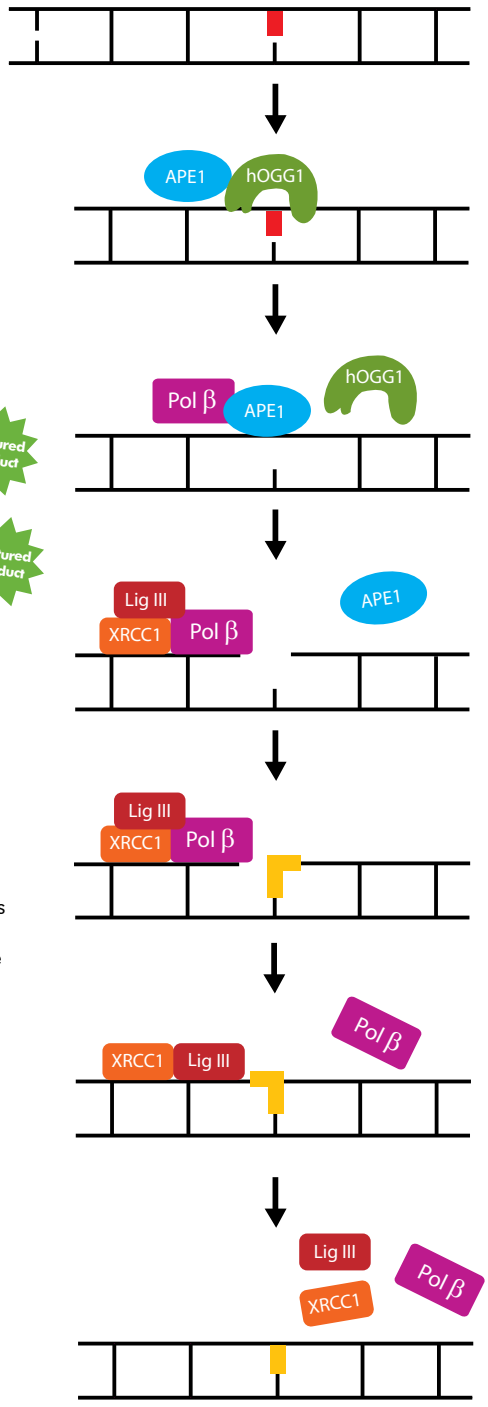
Base excision repair (BER) is a cellular mechanism that repairs damaged DNA during DNA replication. Repairing DNA sequence errors is necessary so that mutations are not induced during replication. Single bases in DNA can be chemically mutated, e.g., by deamination or alkylation, resulting in incorrect base-pairing and consequently mutations in the DNA. Base excision repair involves flipping the mutated base out of the DNA helix and repairing the base alone. This process requires two main enzymes, DNA glycosylases and AP endonucleases. DNA glycosylase is used to break the β-N glycosidic bond to create an AP site. AP endonuclease recognizes this site and nicks the damaged DNA on the 5′ side (upstream) of the AP site, creating a free 3′-OH. DNA polymerase, Pol I, extends the DNA from the free 3′-OH using its exo-nuclease activity to replace the nucleotide of the damaged base, as well as a few downstream. This is followed by sealing of the new DNA strand by DNA ligase.

Catalog#	Product	Host	Type	Application	Species
NB100-101	APE1	Rabbit	Polyclonal	ICC, IF, IHC, IP, WB	Hu, Mu, Rt
NB100-116	APE1 (13B8E5C2)	Mouse	Monoclonal	ChIP, ICC, IF, IHC-Fr, IP	Hu, Mu, Rt
NB100-897	APE1	Goat	Polyclonal	PEP-ELISA, WB	Hu
NB100-152	DNA Ligase III (6G9)	Mouse	Monoclonal	IHC-P, IP, WB	Hu
NB100-146	FEN1	Mouse	Polyclonal	WB	Hu
NB100-150	FEN1 (4E7)	Mouse	Monoclonal	FACS, ICC, IF, WB	Hu
NB100-109	MTH1	Rabbit	Polyclonal	ICC, IF, IHC-Fr, WB	Hu, Mu, Rt
NB600-1032	MYH	Rabbit	Polyclonal	WB	Hu
NB300-881	NEIL1	Goat	Polyclonal	IHC-P, PEP-ELISA, WB	Hu
H00252969-M01	NEIL2 (1B7)	Mouse	Monoclonal	ELISA, RNAi, WB	Hu
NB100-108	NTH1	Rabbit	Polyclonal	ICC, WB	Bv, Hu, Rt
NB100-302	NTH1	Rabbit	Polyclonal	WB	Hu
NB100-106	Ogg1	Rabbit	Polyclonal	WB, IHC	Hu, Mk, Rt
NB120-2168	PARP	Rabbit	Polyclonal	WB, IHC	Hu, Mu, Rt
NB100-111	PARP (C-2-10)	Mouse	Monoclonal	WB, ICC, ELISA	Hu, Mk, Rt
NB500-106	PCNA (PC10)	Mouse	Monoclonal	FACS, ICC, IHC, IP, WB	Hu, Ye, Dr, Rt, Mu, Ch
NB110-3158	PCNA (PC10) [FITC]	Mouse	Monoclonal	IHC, FACS	Dr, Hu, Mu, Rt, Ye
NB100-1414	SMUG1	Goat	Polyclonal	PEP-ELISA, WB	Hu
NB600-1031	Uracil DNA Glycosylase	Rabbit	Polyclonal	WB	Hu, Mu, Rt
H00007374-M01	Uracil DNA Glycosylase (4C12)	Mouse	Monoclonal	ELISA	Hu
	XRCC1	See Homologous Recombination (Page 4)			

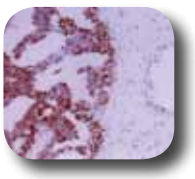
Featured Product

Featured Product

Base Excision Repair Short Patch



APE1 Antibody
NB100-101



Immuno-histochemical analysis of prostate cancer using NB100-101.

Species: Hu, Mu, Rt
Applications: ICC, IF, IHC, IP, WB

PARP (C-2-10) Antibody
NB100-111

Western blot analysis of whole cell extract from(1) HL-60 lysate and (2) induced HL-60 lysate using NB100-111.

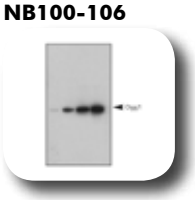
Species: Hu, Mk, Rt
Applications: WB, ICC, ELISA

PCNA (PC10) Antibody
NB500-106

Immuno-histochemical analysis of human colon carcinoma using NB500-106.

Species: Ch, Dr, Hu, Mu, Rt, Ye
Applications: FACS, ICC, IHC, IP, WB

Ogg1 Antibody
NB100-106



Western blot analysis of human recombinant Ogg1 protein using NB100-106.

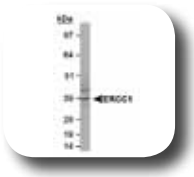
Species: Hu, Mk, Rt
Applications: IHC, WB

Nucleotide Excision Antibodies

Nucleotide excision repair (NER) is an important DNA repair mechanism by which the cell repairs DNA damage occuring to bases. Base damage can be caused by a variety of sources including chemicals and ultraviolet (UV) light from the sun. Using NER, a cell can prevent unwanted mutations by removing the majority of UV-induced DNA damage (mostly in the form of thymine dimmers and 6-4-photoproducts). The importance of this repair mechanism is evidenced by the severe human diseases that result from in-born genetic mutations of NER proteins, i.e. Xeroderma pigmentosum and Cockayne's syndrome. NER recognizes bulky distortions in the shape of the DNA double helix. Recognition of these distortions leads to the removal of a short single-stranded DNA segment that includes the lesion, creating a single-strand gap in the DNA. This gap is subsequently filled in by DNA polymerase, using the undamaged strand as a template.

Catalog#	Product	Host	Type	Application	Species
H00001022-A01	CDK7	Mouse	Polyclonal	ELISA, WB	Hu
NB100-581	CDK7	Rabbit	Polyclonal	IP, WB	Hu
H00001069-A02	Centrin 2	Mouse	Polyclonal	WB, ELISA	Hu
H00000902-M01	Cyclin H (1B8)	Mouse	Monoclonal	ELISA, IHC-P, IF, WB	Hu
NB100-777	DDB1	Goat	Polyclonal	WB	Hu, Mu
NB100-625	DDB1	Rabbit	Polyclonal	WB, IP	Hu, Mu
H00001642-A01	DDB1	Mouse	Polyclonal	ELISA, WB	Hu
NB100-117	ERCC1 (3H11)	Mouse	Monoclonal	WB, IP	Hu
NB500-704	ERCC1 (8F1)	Mouse	Monoclonal	WB, IP, IHC	Hu, Rt
H00002074-A01	CSB	Mouse	Polyclonal	ELISA, WB	Hu
H00001161-M01	ERCC8 (2G3-C6)	Mouse	Monoclonal	ELISA, WB	Hu
H00002965-M01	GTF2H1 (1F12-1B5)	Mouse	Monoclonal	ELISA, IF, IHC-P, RNAi, WB	Hu
H00002967-A01	GTF2H3	Mouse	Polyclonal	ELISA, WB	Hu
NSB726	IKB alpha [pS32/S36]	Rabbit	Polyclonal	WB	Hu
H00003978-M01	DNA Ligase 1 (10G12)	Mouse	Monoclonal	ELISA, IHC-P, WB	Hu
H00005886-M01	hHR23A (3C12)	Mouse	Monoclonal	ELISA, RNAi, WB	Hu
	RPA14	See Checkpoint Signaling (Page 7)			
NB100-157	RPA2	Mouse	Polyclonal	WB	Hu
NB100-332	RPA2	Rabbit	Polyclonal	WB, IP	Hu
NB100-347	RPA2	Rabbit	Polyclonal	ELISA, WB	Hu, Mu
NB100-544	RPA2 [pSer33]	Rabbit	Polyclonal	WB, IP, IF	Hu
NB600-565	RPA2 (9H8)	Mouse	Monoclonal	WB, IP, IF, IHC	Hu
NB100-2204	RPA70	Rabbit	Polyclonal	WB, IP	Hu
NB100-218	XAB2	Rabbit	Polyclonal	WB	Hu
NB100-794	XAB2	Goat	Polyclonal	PEP-ELISA, WB	Hu
H00056949-M01	XAB2 (1D1-1A9)	Mouse	Monoclonal	ELISA, IHC-P, IF, WB	Hu
NB100-92124	XPA	Rabbit	Polyclonal	ELISA, IHC-P, WB	Hu, Mu
NB600-568	XPA (12F5)	Mouse	Monoclonal	IHC, WB	Hu
H00002071-A01	XPB	Mouse	Polyclonal	ELISA, WB	Hu
NB100-477	XPC (3.26)	Mouse	Monoclonal	IHC-P, WB	Hu
NB100-58801	XPC	Rabbit	Polyclonal	IP, WB	Hu, Mu
H00002068-M01	XPD (4G2-2A6)	Mouse	Monoclonal	ELISA, WB	Hu
NB100-120	XPG (8H7)	Mouse	Monoclonal	IHC, IP, WB	Hu

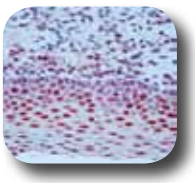
ERCC1 (3H11) Antibody
NB100-117



Western blot analysis of ERCC1 in HeLa whole cell lysate (NB800-PC1) using NB100-117.

Species: Hu
Applications: WB, IP

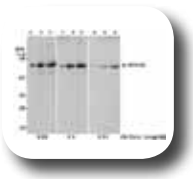
ERCC1 (8F1) Antibody
NB500-704



Immuno-histochemical analysis of human tonsil using NB500-704.

Species: Hu, Rt
Applications: WB, IP, IHC

RPA70 Antibody
NB100-2204



Western blot analysis of HeLa cell lysates using NB100-2204.

Species: Hu
Applications: WB, IP

XAB2 Antibody
NB100-794

Western blot analysis of A431 lysate using NB100-794.

Species: Hu
Applications: PEP-ELISA, WB

XPC (3.26) Antibody
NB100-477

Immuno-fluorescent staining of HeLa cells uisng NB100-477.

Species: Hu
Applications: IHC-P, WB

XAB2 (101-1A9) Antibody
H00056949-M01

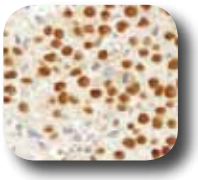
Immuno-histochemical analysis of human lung using H00056949-M01.

Species: Hu
Applications: ELISA, IF, IHC-P, WB

Mismatch Repair Antibodies

Any mutational event that disrupts the superhelical structure can potentially compromise the genetic stability of a cell. Mismatch repair is a system for recognizing and repairing the erroneous insertion, deletion and misincorporation of bases that can arise during DNA replication and recombination, as well as repairing some forms of DNA damage. The fact that the damage detection and repair systems are as complex as the replication machinery itself highlights the importance evolution has attached to DNA fidelity. Examples of mismatched bases include G/T or A/C pairings. The damage is repaired by excising the wrongly incorporated base and replacing it with the correct nucleotide. Usually, this involves more than just the mismatched nucleotide itself, and can lead to the removal of significant tracts of DNA.

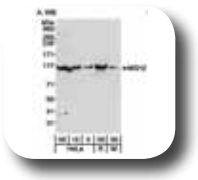
MSH2 Antibody
NB100-2887



Immuno-histochemical analysis of of human colon adenocarcinoma using NB100-2887.

Species: Hu, Mu
Applications: IHC-P

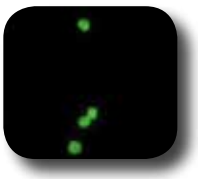
MSH2 Antibody
NB100-621



Western blot analysis of human (HeLa) and mouse (NIH3T3) lysates using NB100-621.

Species: Hu, Mu
Applications: WB, IP

MSH6 Antibody
NB100-328



Immuno-fluorescent staining of HCT-116 cells using NB100-328.

Species: Hu
Applications: ICC, IHC, IP, WB

Catalog #	Product	Host	Type	Application	Species
NB100-197	MLH1	Rabbit	Polyclonal	IHC, IP, WB	Hu
NBP1-19645	MLH1	Rabbit	Polyclonal	IF, WB	Hu, Mu, Rt
NB100-56552	MLH1 (164C819)	Mouse	Monoclonal	WB	Ca, Hu, Mu
NB600-423	MLH1 [Agarose Immobalized]	Rabbit	Polyclonal	IP	Hu
25490002	MLH1	Rabbit	Polyclonal	ELISA	Hu
NB110-59930	MLH1 (G168-15)	Mouse	Monoclonal	IF, IHC	Hu, Mu, Rt
H00004292-M02	MLH1 (M1)	Mouse	Monoclonal	ELISA, IF, IHC-P, WB	Hu
NB100-1071	MLH3	Goat	Polyclonal	PEP-ELISA, WB	Hu
NBP1-00107	MLH3	Rabbit	Polyclonal	IP	Hu
NB600-682	MSH3	Rabbit	Polyclonal	IHC	Rt
NB100-198	MSH2	Rabbit	Polyclonal	WB, IP	Hu
NB100-2887	MSH2	Rabbit	Polyclonal	IHC, IHC-P	Hu, Mu
H00004436-A01	MSH2	Mouse	Polyclonal	ELISA, WB	Hu
NB100-620	MSH2	Rabbit	Polyclonal	WB, IP	Hu
NB100-621	MSH2	Rabbit	Polyclonal	WB, IP	Hu, Mu
NB100-1767	MSH2 (3A2B8C)	Rabbit	Monoclonal	WB, IHC, ELISA	Hu
NB600-424	MSH2 [Agarose Immobalized]	Rabbit	Polyclonal	IP	Hu
NB100-1419	MSH3	Goat	Polyclonal	PEP-ELISA ,WB	Hu
NB100-1422	MSH4	Goat	Polyclonal	PEP-ELISA ,WB	Hu
NB100-1425	MSH5	Goat	Polyclonal	PEP-ELISA ,WB	Hu
38750002	MSH5	Rabbit	Polyclonal	ELISA	Ce
NB100-329	MSH6	Rabbit	Polyclonal	IP, WB	Hu
NB100-328	MSH6	Goat	Polyclonal	ICC, IHC, IP, WB	Hu
NB110-40557	MSH6	Rabbit	Polyclonal	IHC	Hu
NB110-59929	MSH6 (44)	Mouse	Monoclonal	IHC-P	Ca, Hu, Mu, Rt
NB100-1075	PMS1	Goat	Polyclonal	PEP-ELISA, WB	Hu
NB100-209	PMS2	Rabbit	Polyclonal	WB, IP	Hu
NB100-56554	PMS2 (163C1251)	Mouse	Monoclonal	WB	Hu, Mu
NB600-428	PMS2 [Agarose Immobalized]	Rabbit	Polyclonal	IP	Hu

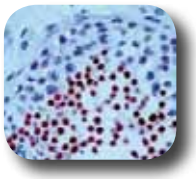
DNA Polymerase Antibodies

DNA polymerase is an enzyme that assists in DNA replication. Such enzymes catalyze the polymerization of deoxyribonucleotides alongside a DNA strand, which are "read" and used as a template. The newly-polymerized molecule is complementary to the template strand and identical to the template's partner strand. DNA polymerase initiates DNA replication by binding to a piece of single-stranded DNA.

Catalog #	Product	Host	Type	Application	Species
NB100-92311	DNA Polymerase Alpha	Rabbit	Polyclonal	ELISA, WB	Hu
NB100-342	DNA Polymerase Beta	Mouse	Polyclonal	ELISA, WB	Hu
NB100-91734	DNA Polymerase Beta	Rabbit	Polyclonal	ELISA, IHC-P, WB	Hu, Mu, Rt
NB600-1025	DNA Polymerase Beta (18S)	Mouse	Monoclonal	WB	Hu, Bv, Mu, Rt, Xp
NB600-1026	DNA Polymerase Beta (61)	Mouse	Monoclonal	IHC, WB	Hu
NB100-476	DNA Polymerase Delta (607)	Mouse	Monoclonal	WB	Hu
H00005427-M01	DNA Polymerase Epsilon p59 (1A3)	Mouse	Monoclonal	ELISA, WB	Hu
H00054107-B01	DNA Polymerase Epsilon	Mouse	Polyclonal	ELISA, IF, WB	Hu
NB100-115	DNA Polymerase Epsilon (3C5.1)	Mouse	Monoclonal	WB	Hu, Mu, Mk
NB100-60423	DNA Polymerase Eta	Rabbit	Polyclonal	IP	Hu
NBP1-33633	DNA Polymerase Gamma	Rabbit	Polyclonal	WB	Hu
NB100-175	DNA Polymerase Iota	Rabbit	Polyclonal	WB	Hu
H00051426-M01	DNA Polymerase Kappa (6F2)	Mouse	Monoclonal	ELISA, IF, IHC-P, RNAi, WB	Hu
NB100-1358	DNA Polymerase Lambda	Goat	Polyclonal	IHC-P, PEP-ELISA, WB	Hu
NB100-81664	DNA Polymerase Lambda	Rabbit	Polyclonal	IP, WB	Hu
	PCNA	See Base Excision Repair (Page 8)			
H00056655-A01	POLE4	Mouse	Polyclonal	ELISA, WB	Hu
H00005980-A01	REV3L	Mouse	Polyclonal	ELISA, WB	Hu

Featured Product

DNA Polymerase Beta (61) Antibody
NB600-1026



Immuno-histochemical analysis of human testis using NB600-1026.

Species: Hu
Applications: IHC, WB

DNA Polymerase Epsilon (3C5.1) Antibody
NB100-115

Western blot analysis of HeLa whole cell lysate using NB100-115.

Species: Ha, Hu, Mk, Mu
Applications: WB

Direct Reversal of Damage Antibodies

Direct reversal of O6 adducts caused by chemotherapy agents is accomplished in mammalian cells by the protein O6-methylguanine DNA methyltransferase (MGMT). Some tumors overexpress MGMT and are resistant to alkylator therapy.

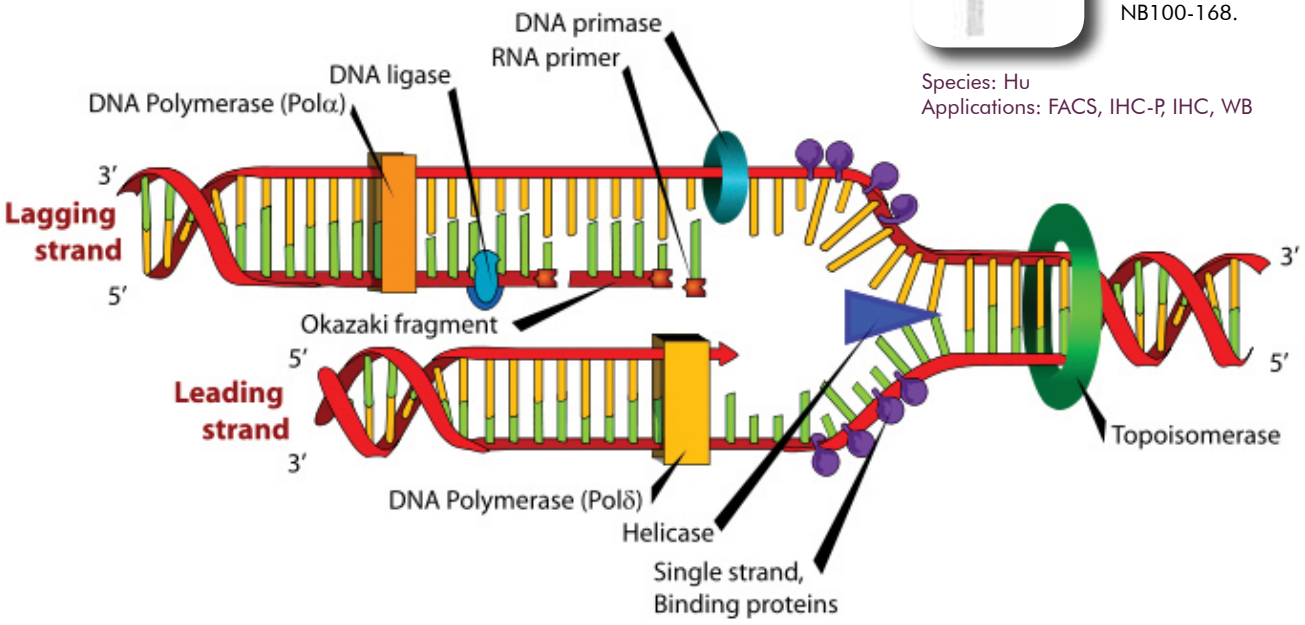
Catalog #	Product	Host	Type	Application	Species
NB100-692	MGMT (MT 3.1)	Mouse	Monoclonal	FACS, IHC, WB	Hu
NB100-168	MGMT (MT 23.2)	Mouse	Monoclonal	FACS, IHC-P, IHC, WB	Hu
31620002	MGMT	Rabbit	Polyclonal	ELISA	Hu

Featured Product

MGMT (MT23.2) Antibody
NB100-168

Western blot analysis of CEM whole cell extract using NB100-168.

Species: Hu
Applications: FACS, IHC-P, IHC, WB



Longevity Antibodies

A number of individual genes have been identified that influence variations in lifespan within a population of organisms. The effects of these genes are strongly dependent on the environment, particularly on the organism's diet. Caloric restriction reproducibly results in extended lifespan in a variety of organisms, likely via nutrient sensing pathways and decreased metabolic rate. The molecular mechanisms by which such restriction results in lengthened lifespan are unclear; however, the behavior of many genes known to be involved in DNA repair is altered under conditions of caloric restriction.

Catalog#	Product	Host	Type	Application	Species
NB100-1924	DAF-3	Rabbit	Polyclonal	ChIP, IP, WB	Ce
NB200-307	FOXO1A (7H3)	Mouse	Monoclonal	WB	Hu
25580002	FOXO1A	Rabbit	Polyclonal	ELISA	Hu
NB100-614	FOXO3A	Rabbit	Polyclonal	WB, IP	Hu
NB100-1438	FOXO3A	Goat	Polyclonal	PEP-ELISA, WB	Hu
NBP1-19826	FOXO3A	Rabbit	Polyclonal	IF, IHC-P, WB	Hu, Mu
25590002	FOXO3A	Rabbit	Polyclonal	ELISA	Hu
H00002309-M08	FOXO3A (4F2)	Mouse	Monoclonal	ELISA, IHC-P, WB	Hu
NB110-57058	HSF1 (EP1710Y)	Rabbit	Monoclonal	FACS, ICC, IP, IHC, WB	Hu
NB100-79972	HSF1 (EP1711Y) [phospho Ser303/Ser307]	Rabbit	Monoclonal	ICC, IHC, WB	Hu
NB100-81966	HSF1	Rabbit	Polyclonal	IHC, WB	Hu
	Ku70	See Non-Homologous End Joining (Page 2)			
H00006446-M01	SGK1 (4D7-G3)	Mouse	Monoclonal	ELISA, IHC-P, IF, RNAi, WB	Hu
H00006446-M02	SGK1 (3E3)	Mouse	Monoclonal	ELISA, IHC-P, WB	Hu
H00006446-M03	SGK1 (1C4)	Mouse	Monoclonal	ELISA, IHC-P, WB	Hu
NB100-2132/2133	SIRT1	Rabbit	Polyclonal	IP, WB	Hu
NB600-906	SIRT2	Rabbit	Polyclonal	ICC, IF, WB	Mu
NB110-57573	SIRT1 (E104)	Rabbit	Monoclonal	ICC, IHC-P, IP, WB	Hu
NB110-57574	SIRT1 (E54)	Rabbit	Monoclonal	FACS, ICC, IP, IHC, WB	Hu
NB100-2230	SIRT2	Rabbit	Polyclonal	IP, WB	Hu
NB110-57575	SIRT2 (EP1668Y)	Rabbit	Monoclonal	FACS, ICC, IP, WB	Hu, Rt
NB600-476	TERT	Rabbit	Polyclonal	IF, IP, WB	Hu
NB100-317	TERT (2C4)	Mouse	Monoclonal	FACS, ICC, IF, IHC, WB	Hu
NB100-297	TERT (2D8)	Mouse	Monoclonal	FACS, ICC, IF, WB	Hu
NB120-32020	TERT (Y182)	Rabbit	Monoclonal	FACS, ICC, WB	Hu

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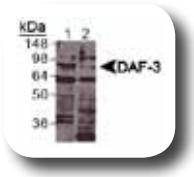
DAF-3 Antibody
NB100-1924



Western blot analysis of C. elegans. Lane 1: wild worm type Lane 2: DAF-3 deletion worms using NB100-1924.

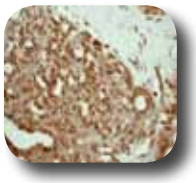
Species: Ce
Applications: ChIP, IP, WB

FOXO3A Antibody
NB100-613

IP/Western blot analysis of MCF7 cells using NB100-613.

Species: Hu
Applications: WB, IP

HSF1 (EP1710Y) Antibody
NB110-57058



Immuno-histochemical analysis of human ovarian carcinoma using NB110-57058.

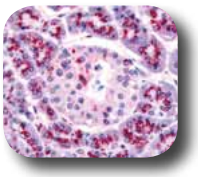
Species: Hu
Applications: FACS, ICC, IHC, IP, WB

SIRT1(E54) Antibody
NB110-57574

Species: Hu
Applications: FACS, ICC, IHC, IP, WB

Immunohistochemical analysis of human lymphoma using NB110-57574.

TERT (2C4) Antibody
NB100-317



Species: Hu
Applications: FACS, ICC, IF IHC, IHC-P, WB

Immunohistochemical analysis of exocrine cells and a subset of islets of Langerhans using NB100-317.

TERT (2D8) Antibody
NB100-297

Species: Hu
Applications: FACS, ICC, IF, WB

Western blot analysis of MJ90 cells using NB100-297.

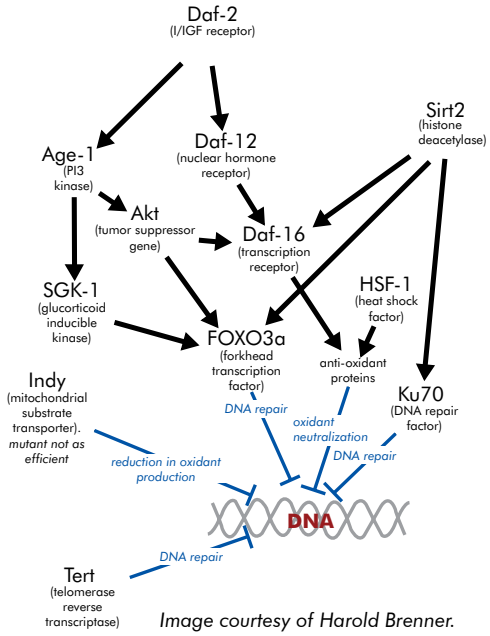


Image courtesy of Harold Brenner.

Syndromes Linked to DNA Repair Defects

Defects in DNA repair are responsible for several genetic disorders, including xeroderma pigmentosum, Cockayne syndrome and trichothiodystrophy. Werner's syndrome, Bloom's syndrome and ataxia telangiectasia are often called accelerated aging diseases because their victims appear elderly and suffer from aging related diseases at an abnormally young age. Other diseases associated with reduced DNA repair function include Fanconi's anemia, hereditary breast cancer and hereditary colon cancer.

Disease	Catalog#	Product	Host	Type	Application	Species
Ataxia Telangiectasia		ATM	See Homologous Recombination (Page 3)			
Bloom Syndrome Protein Blm	NB100-214	BLM	Rabbit	Polyclonal	IHC, WB	Hu
	NB100-324	BLM	Goat	Polyclonal	IHC, WB	Hu
	NB100-1588	BLM	Rabbit	Polyclonal	IP	Mu
	NB100-1589	BLM	Rabbit	Polyclonal	IP	Mu
	NB100-1590	BLM	Rabbit	Polyclonal	IP, WB	Mu
	NB100-669	BLM (BFL-103)	Mouse	Monoclonal	IHC-Fr, WB	Hu
	H00000642-A01	BLMH	Mouse	Polyclonal	ELISA, WB	Hu
	NBP1-46851	BLM [phospho Thr99]	Rabbit	Polyclonal	WB	Hu
Hereditary Breast Cancer		BRCA1	See Homologous Recombination (Page 3)			
		BRCA2	See Homologous Recombination (Page 3)			
Fanconi Anemia	NB100-2564	FANCA	Rabbit	Polyclonal	WB	Hu
	NBP1-18977	FANCA	Rabbit	Polyclonal	IP, WB	Hu
	NB100-2565	FANCC	Rabbit	Polyclonal	WB	Hu, Mu, Rt
	NB100-182	FANCD2	Rabbit	Polyclonal	IHC-P, IP, WB	Hu, Mu
	NBP1-18976	FANCD2	Rabbit	Polyclonal	IF, IHC, IP, WB	Hu
	NB100-411	FANCD2 (103)	Mouse	Monoclonal	WB, ELISA	Hu
	NB100-316	FANCD2 (FI-17)	Mouse	Monoclonal	ChIP, IP, WB	Hu
	NB100-502	FANCD2 [Ser222]	Rabbit	Polyclonal	WB	Hu
	NB100-2566	FANCG	Rabbit	Polyclonal	WB	Hu
	H00002189-M01	FANCG (2C8)	Mouse	Monoclonal	ELISA, IF, RNAi, WB	Hu
	NB100-60447	FANCI	Rabbit	Polyclonal	IP, WB	Hu
	NB100-416	FANCJ	Rabbit	Polyclonal	IP, WB	Hu
	NB100-350	FANCJ (G011-3E6)	Mouse	Monoclonal	WB	Hu
	NB100-189	FANCJ (pp15-IB4)	Mouse	Monoclonal	WB	Hu
Hereditary Nonpolyposis Colorectal Cancer		MSH2	See Mismatch Repair (Page 10)			
		MLH1	See Mismatch Repair (Page 10)			
		PMS1	See Mismatch Repair (Page 10)			
		PMS2	See Mismatch Repair (Page 10)			
Werner Syndrome	NB100-471	WRN	Rabbit	Polyclonal	IP, WB	Hu
	NB100-472	WRN	Rabbit	Polyclonal	IP, WB	Hu
	25480002	WRN	Rabbit	Polyclonal	ELISA	Hu
Xeroderma Pigmentosum		XPA	See Nucleotide Excision Repair (Page 9)			
		XPB	See Nucleotide Excision Repair (Page 9)			
		XPC	See Nucleotide Excision Repair (Page 9)			
		XPD	See Nucleotide Excision Repair (Page 9)			
		XPG	See Nucleotide Excision Repair (Page 9)			

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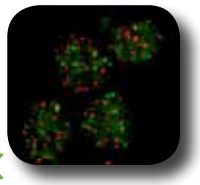
[BLM Antibody NBP1-44075] Davies SL, et al. Phosphorylation of the Bloom's syndrome helicase and its role in recovery from S-phase arrest. Mol Cell Biol. 2004 Feb;24(3):1279-91. [PMID: 14729972]

BLM Antibody NB100-214

Western blot analysis of 293T cells using NB100-214.

Species: Hu
Applications: IP, WB

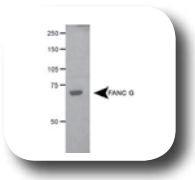
FANCD2 Antibody NB100-182



Immuno-fluorescent staining of SiHa cells using NB100-182.

Species: Hu, Mu
Applications: IF, IHC-P, IP, WB

FANCG Antibody NB100-2566



Western blot analysis of FANCG transfected COS1 cell lysate using NB100-2566.

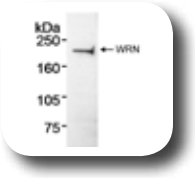
Species: Hu
Applications: WB

FANCJ Antibody NB100-416

Western blot analysis of:
(1) MCF-7 lysate
(2) HeLa lysate
(3) 293 lysate and
(4) SKOV3 lysate
using NB100-416.

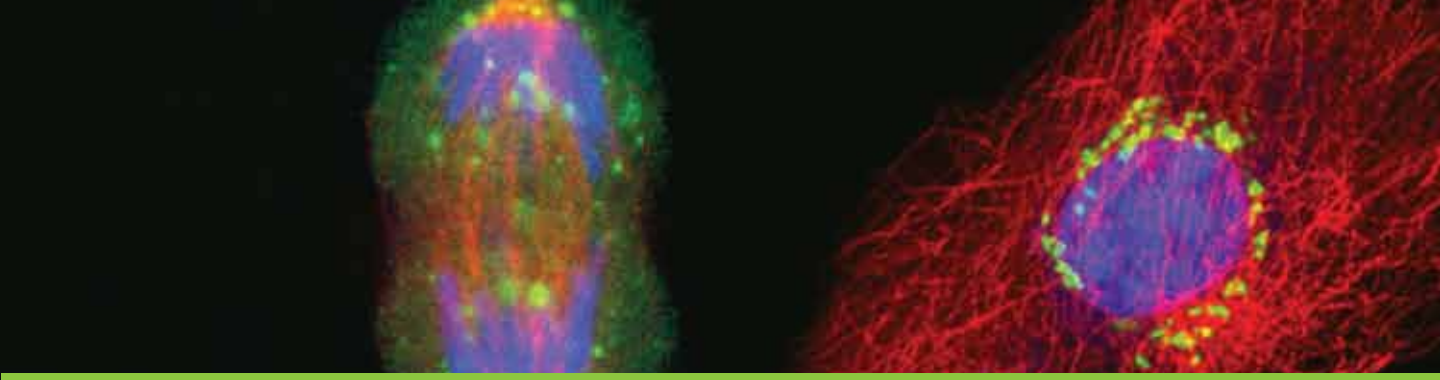
Species: Hu
Applications: WB, IP

WRN Antibody NB100-472



Western blot analysis of 293T whole cell lysate using NB100-472.

Species: Hu
Applications: IP, WB



CATALOG OF ANTIBODIES FOR

DNA REPAIR

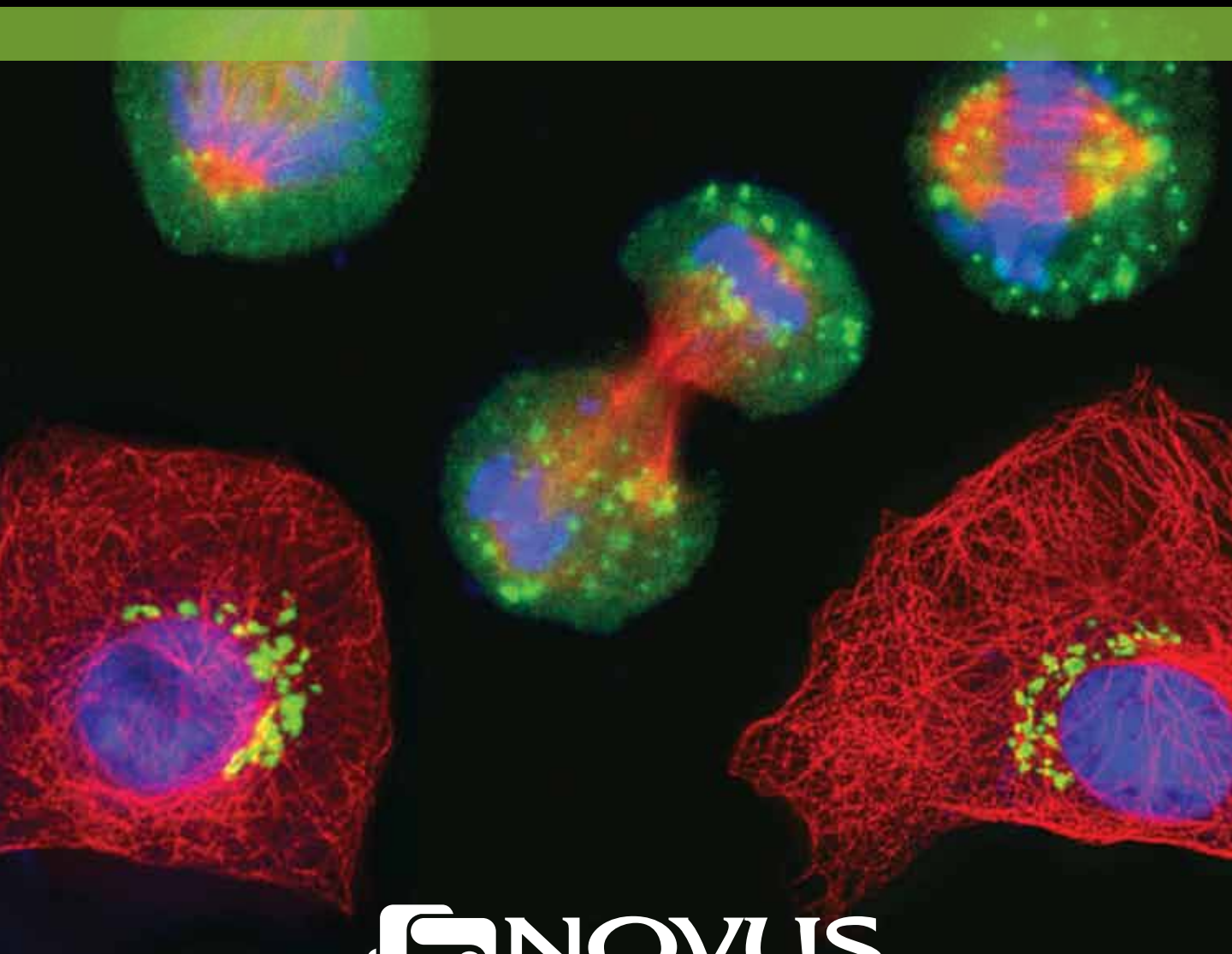


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Table of Contents

Application Key

ChIP - Chromatin Immunoprecipitation

ELISA - Enzyme-linked Immunosorbent Assay

FACS - Fluorescent Activated Cell Sorting

IA - In vitro Assay

ICC - Immunocytochemistry

IF - Immunofluorescence

IHC - Immunohistochemistry

IHC-Fr - Immunohistochemistry Frozen

IHC-P - Immunohistochemistry Paraffin

IP - Immunoprecipitation

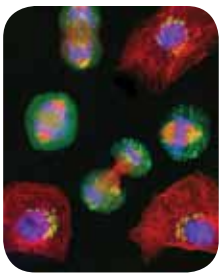
PEP-ELISA - Peptide ELISA

RNAi - RNAi Validation

WB - Western Blot

Reactivity Key

Am - Amphibian
Bv - Bovine
Ca - Canine
Ce - C. elegans
Ch - Chicken
Dr - Drosophila
Eq - Equine
Ft - Ferret
Ha - Hamster
Hu - Human
Mk - Monkey
Mu - Mouse
Rb - Rabbit
Rt - Rat
Vi - Virus
Xp - Xenopus
Ye - Yeast
Ze - Zebrafish



Cover Image
Dividing HeLa Cells

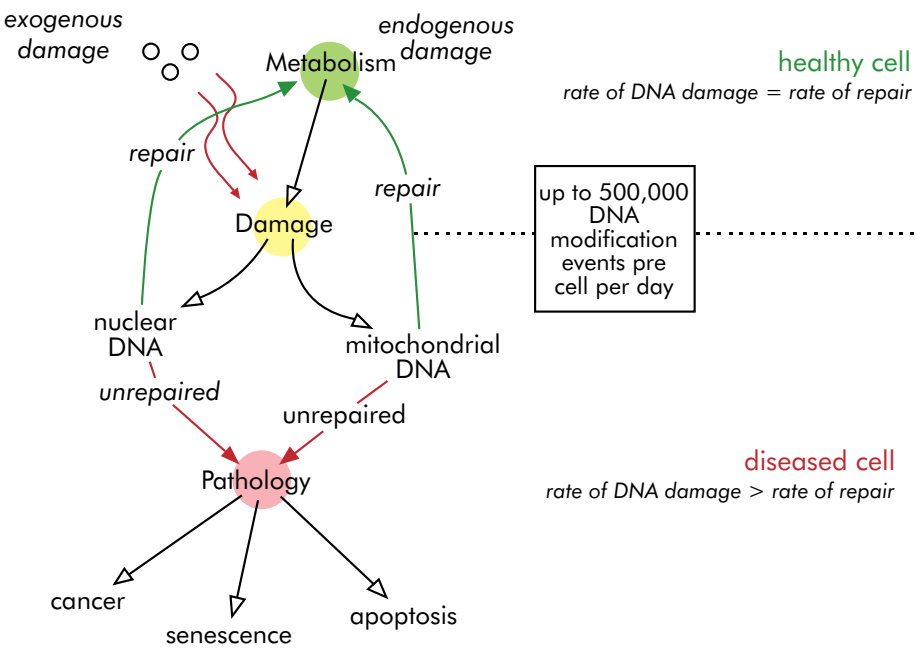
DNA Repair

DNA repair refers to a collection of processes by which a cell identifies and corrects damage to the DNA molecules that encode its genome. In human cells, both normal metabolic activities and environmental factors (such as UV light) can cause DNA damage, resulting in up to half a million individual molecular lesions per cell per day. Many of these lesions cause structural damage to the DNA molecule and can alter or eliminate the cell's ability to transcribe the gene that the affected DNA encodes. Other lesions induce potentially harmful mutations in the cell's genome, which affect the survival of its daughter cells after it undergoes mitosis. Consequently, the DNA repair process must be constantly active so that it can respond quickly to any damage in the DNA structure.

The rate of DNA repair is dependent on many factors, including the cell type, the age of the cell, and the extracellular environment. A cell that has accumulated a large amount of DNA damage, or one that no longer effectively repairs damage incurred to its DNA, can enter one of three possible states:

1. An irreversible state of dormancy, known as senescence.
2. Cell suicide, also known as apoptosis or programmed cell death.
3. Unregulated cell division, which can lead to the formation of a cancerous tumor.

The DNA repair ability of a cell preserves the integrity of its genome and thus is crucial to its normal functioning and that of the organism. Many genes that were initially shown to influence lifespan, in fact, relate to DNA damage repair and protection. Failure to correct molecular lesions in cells that form gametes can introduce mutations into the genomes of the offspring and thus influence the rate of evolution.



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2. [APE1 NB100-101] Yang Z, et al. Nitric oxide initiates progression of human melanoma via a feedback loop mediated by apurinic/apyrimidinic endonuclease-1/redox factor-1, which is inhibited by resveratrol. Mol Cancer Ther. 2008 Dec;7(12):3751-60. [PMID: 19074850]

3. [ATM NB100-104] [SMC1 [phospho-Ser966] NB100-206] Hu H, et al. ATM is down-regulated by N-Myc-regulated microRNA-421. Proc Natl Acad Sci U S A. 2010 Jan 26;107(4):1506-11. [PMID: 20080624]

4. [Blooms Syndrome Protein Blm [phospho Thr99] NBP1-46851] Shimura T, et al. Bloom's syndrome helicase and Mus81 are required to induce transient double-strand DNA breaks in response to DNA replication stress. J Mol Biol. 2008 Jan 25;375(4):1152-64. [PMID: 14729972]

5. [BRCA1 [phospho Ser1423] NB100-226] Cheng WH, et al. WRN is required for ATM activation and the S-phase checkpoint in response to interstrand cross-link-induced DNA double-strand breaks. Mol Biol Cell. 2008 Sep;19(9):3923-33. Epub 2008 Jul 2. [PMID: 18596239]

6. [Dnmt3a NB100-265] Shikauchi Y, et al. SALL3 interacts with DNMT3A and shows the ability to inhibit CpG island methylation in hepatocellular carcinoma. Mol Cell Biol. 2009 Apr;29(7):1944-58. Epub 2009 Jan 12. [PMID: 19139273]

7. [Dnmt3b NB100-266] Morey Kinney SR, et al. Stage-specific alterations of DNA methyltransferase expres sion, DNA hypermethylation, and DNA hypomethylation during prostate cancer progression in the transgenic adenocarcinoma of mouse prostate model. Mol Cancer Res. 2008 Aug;6(8):1365-74. [PMID: 18667590]

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10. [Mre11 NB100-142] [NBS1 NB100-143] [RAD50 NB100-154] Karen KA, et al. Temporal regulation of the Mre11-Rad50-Nbs1 complex during adenovirus infection. J Virol. 2009 May;83(9):4565-73. [PMID: 19244322]

11. [Ogg1 NB100-106] de Souza-Pinto NC, et al. The recombination protein RAD52 cooperates with the excision repair protein OGG1 for the repair of oxidative lesions in mammalian cells. Mol Cell Biol. 2009 Aug;29(16):4441-54. Epub 2009 Jun 8. [PMID: 19506022]

12. [Rad51C NB100-177] Gildemeister OS, Sage JM, Knight KL. Cellular redistribution of Rad51 in response to DNA damage: novel role for Rad51C. J Biol Chem. 2009 Nov 13;284(46):31945-52. [PMID: 19783859]

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