Product Datasheet

XRCC1 Antibody - BSA Free
NBP1-87154

Unit Size: 0.1 ml

Store at 4C short term. Aliquot and store at -20C long term. Avoid freeze-thaw cycles.

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Publications: 7

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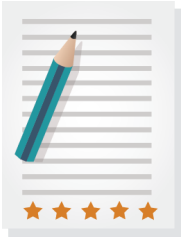
Updated 2/15/2026 v.20.1



NBP1-87154

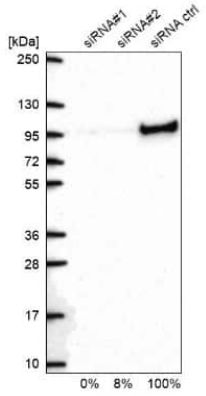
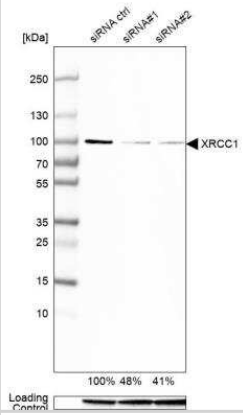
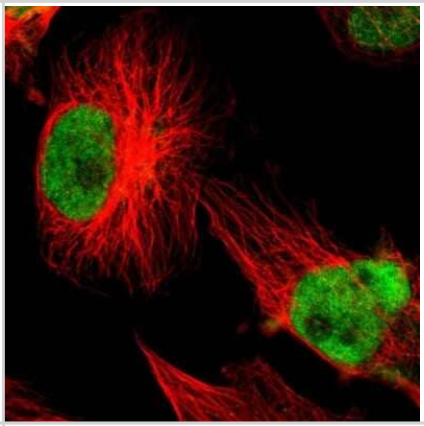
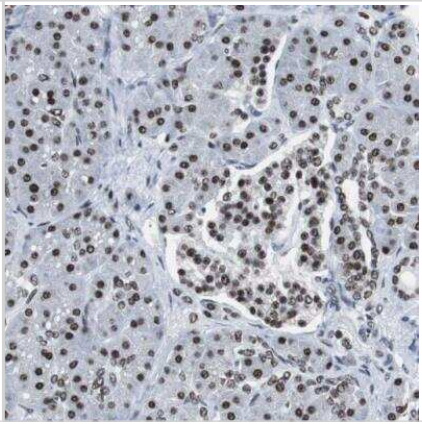
XRCC1 Antibody - BSA Free

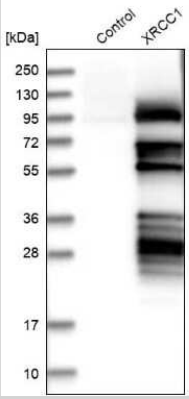
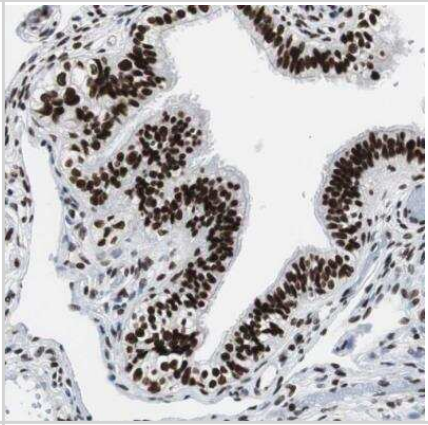
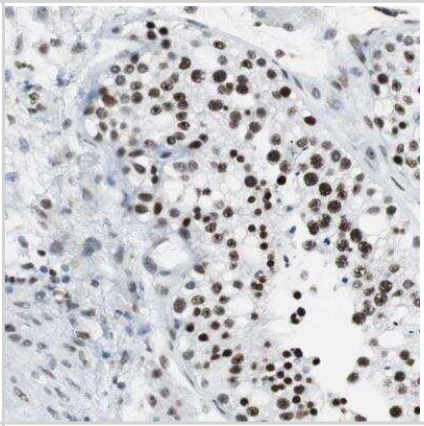
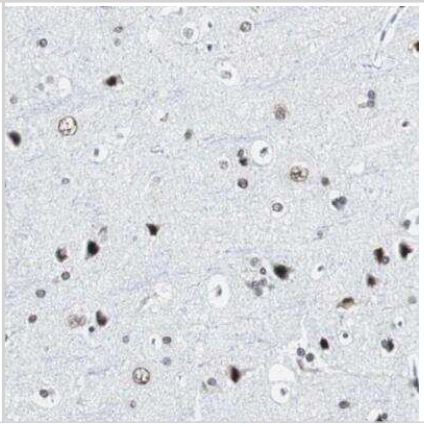
Product Information	
Unit Size	0.1 ml
Concentration	Concentrations vary lot to lot. See vial label for concentration. If unlisted please contact technical services.
Storage	Store at 4C short term. Aliquot and store at -20C long term. Avoid freeze-thaw cycles.
Clonality	Polyclonal
Preservative	0.02% Sodium Azide
Isotype	IgG
Purity	Affinity purified
Buffer	PBS (pH 7.2) and 40% Glycerol

Product Description	
Description	Novus Biologicals Rabbit XRCC1 Antibody - BSA Free (NBP1-87154) is a polyclonal antibody validated for use in IHC, WB, ICC/IF and IP. Anti-XRCC1 Antibody: Cited in 6 publications. All Novus Biologicals antibodies are covered by our 100% guarantee.
Host	Rabbit
Gene ID	7515
Gene Symbol	XRCC1
Species	Human
Reactivity Notes	Immunogen displays the following percentage of sequence identity for non-tested species: Mouse (85%), Rat (85%)
Immunogen	This antibody was developed against Recombinant Protein corresponding to amino acids: WDRVKIVCSQPYSKDSPFGLSFVRFHSPPDKDEAEAPSQKVTVTKLGQFRVKEEDESANSLRPGALFFSRINKTSPVTASDPAGPSYAAATLQASSAASSASPVSRAIGSTSKPQESPKGKRKLDLNQEEKKT

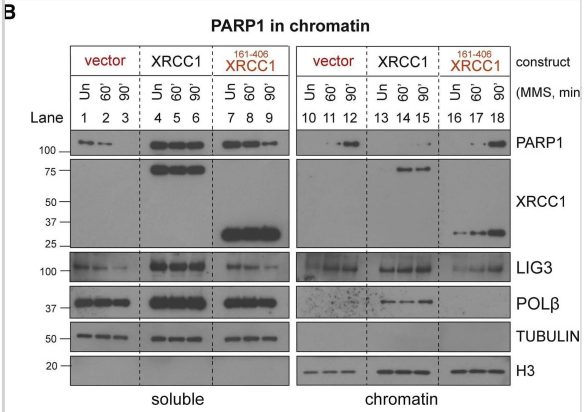
Product Application Details	
Applications	Western Blot, Immunohistochemistry-Paraffin, Immunocytochemistry/ Immunofluorescence, Immunohistochemistry, Knockdown Validated
Recommended Dilutions	Western Blot 0.04-0.4 ug/ml, Immunohistochemistry 1:200 - 1:500, Immunocytochemistry/ Immunofluorescence 0.25-2 ug/ml, Immunohistochemistry-Paraffin 1:200 - 1:500, Knockdown Validated
Application Notes	IHC-Paraffin, HIER pH 6 retrieval is recommended. ICC/IF, Fixation Permeabilization: Use PFA/Triton X-100.

Images

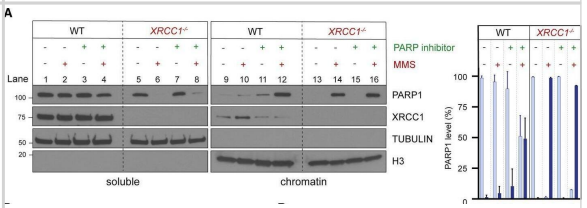
Western Blot: XRCC1 Antibody [NBP1-87154] - Analysis in U2OS cells transfected with control siRNA, target specific siRNA probe #1 and #2,. Remaining relative intensity is presented	
Western Blot: XRCC1 Antibody [NBP1-87154] - Analysis in A-549 cells transfected with control siRNA, target specific siRNA probe #1 and #2. Remaining relative intensity is presented. Loading control: Anti-GAPDH.	
Immunocytochemistry/Immunofluorescence: XRCC1 Antibody [NBP1-87154] - Staining of human cell line U-251 MG shows localization to nucleoplasm. Antibody staining is shown in green.	
Immunohistochemistry-Paraffin: XRCC1 Antibody [NBP1-87154] - Staining of human pancreas shows moderate to strong nuclear positivity in exocrine glandular cells.	

Western Blot: XRCC1 Antibody [NBP1-87154] - Analysis in control (vector only transfected HEK293T lysate) and XRCC1 over-expression lysate (Co-expressed with a C-terminal myc-DDK tag (3.1 kDa) in mammalian HEK293T cells).	
Immunohistochemistry-Paraffin: XRCC1 Antibody [NBP1-87154] - Staining of human fallopian tube shows strong nuclear positivity in glandular cells.	
Immunohistochemistry-Paraffin: XRCC1 Antibody [NBP1-87154] - Staining of human testis shows strong nuclear positivity in cells in seminiferous ducts.	
Immunohistochemistry-Paraffin: XRCC1 Antibody [NBP1-87154] - Staining of human cerebral cortex shows strong nuclear positivity in neurons.	

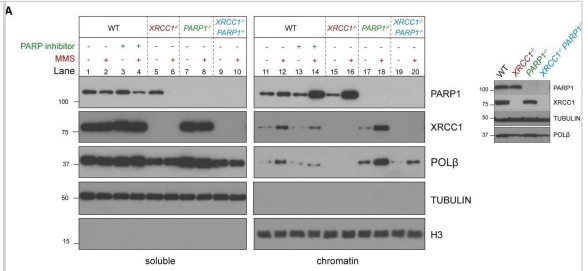
XRCC1 assembles protein complexes that regulate PARP1 activity, NAD + consumption, and trapping during BER(A) Levels of PARP1 auto-ribosylation detected as above in XRCC1−/− U2OS cell lines stably transfected with empty vector or with an expression vector encoding full-length recombinant Myc-His-XRCC1 or truncated Myc-His-XRCC1161–406 during incubation or not (Un) for the indicated times with 0.1 mg/mL MMS. The expression level of the recombinant XRCC1 proteins is shown (right).(B) Levels of PARP1, XRCC1, LIG3, and POL β in cell-equivalent aliquots of soluble and chromatin-containing fractions from the indicated U2OS cell lines following treatment for the indicated times with 0.1 mg/mL MMS. The fractionated cell extracts were treated with recombinant PARG immediately prior to SDS-PAGE to ensure that auto-ribosylation did not obscure detection of PARP1.(C) DNA strand breaks quantified by alkaline comet assays in the indicated U2OS cell lines following treatment with the indicated concentrations of MMS for 15 min. Data plotted are the individual comet tail moments of 50 cells per sample per experiment, with tail moments plotted vertically and each of three independent experiments plotted side by side. Statistical significance was ascertained by one-way ANOVA of the mean tail moments from 3 independent experiments with Sidak's post hoc multiple comparisons test (□p ≤ 0.05, □□p ≤ 0.01, □□□□p ≤ 0.0001).(D) Cell extracts prepared from Un or MMS-treated (0.1 mg/mL, 60 min) WT and XRCC1−/− RPE-1 cells were incubated for 45 min in the absence or presence of 1 mM NAD+, as indicated.See also Figure S3. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34102106), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



XRCC1 suppresses endogenous PARP1 trapping during BER(A) PARP1 levels in cell-equivalent aliquots of soluble and chromatin-containing fractions of WT and XRCC1−/− RPE-1 cells, measured by western blotting. Cells were incubated or not with 10 μM PARP inhibitor (KU0058948) and/or MMS (0.1 mg/mL) for 1 h, as indicated, prior to subcellular fractionation. Representative immunoblots are shown on the left and quantification on the right. See also Figures S1C and S1D.(B) Levels of PARP1 auto-ribosylation in WT and XRCC1−/− RPE-1 cells during treatment with 0.1 mg/mL MMS, detected by the poly(ADP-ribose)-specific detection reagent MABE1031.(C) Top: PARP1 levels in cell-equivalent aliquots of soluble and chromatin-containing fractions from WT and XRCC1−/− RPE-1 cells treated for the indicated times with 0.1 mg/mL MMS. Bottom: as above, but the cell extracts were treated with recombinant PARG to remove all poly(ADP-ribose) immediately prior to SDS-PAGE.(D) DNA strand breaks quantified by alkaline comet assays in WT and XRCC1−/− RPE-1 cells during treatment with 0.1 mg/mL MMS. Data plotted are the individual comet tail moments (an arbitrary measure of DNA strand breakage) of 50 cells per sample per experiment, with tail moments for each experiment plotted vertically and three independent experiments plotted side by side. Statistical significance was ascertained by one-way ANOVA of the mean tail moments from 3 experiments with Sidak's multiple comparisons test (□□□□p ≤ 0.0001). Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34102106), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Endogenous PARP1 trapping impedes POLβ recruitment into chromatin during BER(A) PARP1, XRCC1, and POLβ levels in the soluble and chromatin-containing fractions (1:4 cell equivalents, respectively) of WT and the indicated RPE-1 cell lines, measured by western blotting. Cells were pre-treated or not with the PARP inhibitor (10 μM) and/or MMS (0.1 mg/mL) for 1 h, as indicated. A western blot showing total PARP1, XRCC1, and POLβ levels in the cell lines is shown (right).(B) A model for endogenous PARP1 trapping during BER. Blue box: in WT cells, XRCC1 protein complexes limit PARP1 engagement and activity during BER by promoting efficient hand-off of SSB intermediates to POLβ and LIG3, preventing PARP1 from impeding repair. Orange box: in XRCC1−/− cells, the absence of XRCC1 protein complexes results in excessive cycles of PARP1 association/activation at SSB intermediates, which impedes access by other BER enzymes and blocks their repair, resulting in SSB accumulation. If this scenario is sufficiently prolonged, such as at high levels of base damage, then this increased PARP1 engagement leads progressively to NAD+ depletion, declining PARP1 auto-ribosylation and dissociation, and accumulation of PARP1 in chromatin. PARP1 trapping in this scenario thus reflects both increased PARP1 association at SSB intermediates and subsequently decreased PARP1 dissociation, both of which impede BER in a manner reminiscent of chemical PARP inhibitors (pink box shown for comparison). Green box: additional deletion of PARP1 in XRCC1−/− cells allows access of BER intermediates by POLβ, LIG3, and/or alternative DNA repair enzymes, restoring normal rates of BER. Image collected and cropped by CiteAb from the following open publication (https://pubmed.ncbi.nlm.nih.gov/34102106), licensed under a CC-BY license. Not internally tested by Novus Biologicals.



Publications

Lee, TH;Qiao, CX;Kuzin, V;Shi, Y;Farkas, M;Zhao, Z;Ramanarayanan, V;Wu, T;Guan, T;Zhou, X;Corujo, D;Buschbeck, M;Baranello, L;Oberdoerffer, P; Epigenetic control of topoisomerase 1 activity presents a cancer vulnerability Nature communications 2025-08-12 [PMID: 40796804]

Wu W, Hill SE, Nathan WJ et al. Neuronal enhancers are hotspots for DNA single-strand break repair Nature 2021-05-20 [PMID: 33767446] (Immunoprecipitation, Western Blot)

van den Heuvel D, Rodríguez-Martínez M, van der Meer PJ et Al. STK19 facilitates the clearance of lesion-stalled RNAPII during transcription-coupled DNA repair Cell 2024-11-11 [PMID: 39547229]

Gautam A, Fawcett H, Burdova K et al. APE1-dependent base excision repair of DNA photodimers in human cells Molecular cell 2023-10-19 [PMID: 37816354] (ICC/IF, Human)

Details:
ICC/IF 1:2000 dilution

Bilkis R, Lake RJ, Cooper KL et al. The CSB chromatin remodeler regulates PARP1- and PARP2-mediated single-strand break repair at actively transcribed DNA regions Nucleic acids research 2023-06-16 [PMID: 37326017] (WB, Human)

Demin A, Hirota K, Tsuda M et al. XRCC1 Prevents Toxic PARP1 Trapping During DNA Base Excision Repair Mol Cell 2021-06-08 [PMID: 34102106]

Komulainen E, Badman J, Rey S et al. Parp1 hyperactivity couples DNA breaks to aberrant neuronal calcium signalling and lethal seizures EMBO reports 2021-05-05 [PMID: 33932076]

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HAF008	Goat anti-Rabbit IgG Secondary Antibody [HRP]
NB7160	Goat anti-Rabbit IgG (H+L) Secondary Antibody [HRP]
NBP2-24891	Rabbit IgG Isotype Control

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