

DinB (A-9): sc-166667

BACKGROUND

Problems in DNA replication may lead to breaks in the replication fork, and recombinational reactions occur to restore the integrity of the fork via strand-invasion of the broken chromosome with its homologous strand. If this happens within repeated DNA sequences, genetic rearrangements may be produced. The bacterial UmuC/DinB family consists of bypass polymerases that are responsible for translesion DNA synthesis. DinB, also referred to as DNA polymerase IV or DNA polymerase κ , is an SOS-inducible, error-prone DNA polymerase that plays a role in DNA damage-induced mutagenesis by preferentially making frameshift mutations. DinB is uniquely and highly expressed in the adrenal cortex and testis, as well as in a variety of other tissues. p53 regulates DinB and exposure to various DNA-damaging agents causes an upregulation of DinB.

REFERENCES

1. Silvian, L.F., et al. 2001. Crystal structure of a DinB family error-prone DNA polymerase from *Sulfolobus solfataricus*. *Nat. Struct. Biol.* 8: 984-989.
2. Zhou, B.L., et al. 2001. Crystal structure of a DinB lesion bypass DNA polymerase catalytic fragment reveals a classic polymerase catalytic domain. *Mol. Cell* 8: 427-437.
3. Velasco-Miguel, S., et al. 2003. Constitutive and regulated expression of the mouse DinB (Pol- κ) gene encoding DNA polymerase κ . *DNA Repair* 2: 91-106.

CHROMOSOMAL LOCATION

Genetic locus: POLK (human) mapping to 5q13.3; Polk (mouse) mapping to 13 D1.

SOURCE

DinB (A-9) is a mouse monoclonal antibody raised against amino acids 131-310 mapping near the N-terminus of DinB of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-166667 X, 200 μ g/0.1 ml.

DinB (A-9) is available conjugated to agarose (sc-166667 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166667 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166667 PE), fluorescein (sc-166667 FITC), Alexa Fluor® 488 (sc-166667 AF488), Alexa Fluor® 546 (sc-166667 AF546), Alexa Fluor® 594 (sc-166667 AF594) or Alexa Fluor® 647 (sc-166667 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166667 AF680) or Alexa Fluor® 790 (sc-166667 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

DinB (A-9) is recommended for detection of all DinB isoforms of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

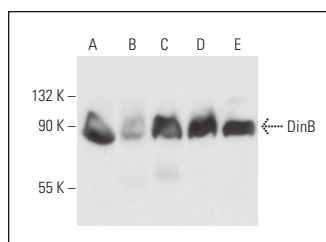
Suitable for use as control antibody for DinB siRNA (h): sc-60537, DinB siRNA (m): sc-60538, DinB shRNA Plasmid (h): sc-60537-SH, DinB shRNA Plasmid (m): sc-60538-SH, DinB shRNA (h) Lentiviral Particles: sc-60537-V and DinB shRNA (m) Lentiviral Particles: sc-60538-V.

DinB (A-9) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

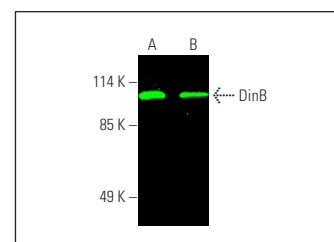
Molecular Weight of DinB: 99 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, F9 cell lysate: sc-2245 or PC-12 cell lysate: sc-2250.

DATA



DinB (A-9): sc-166667. Western blot analysis of DinB expression in F9 (A), PC-12 (B), DU 145 (C) and COLO 320DM (D) whole cell lysates and HeLa nuclear extract (E).



DinB (A-9): sc-166667. Near-infrared western blot analysis of DinB expression in CCRF-CEM (A) and COLO 320DM (B) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgG κ BP-CFL 680: sc-516180.

SELECT PRODUCT CITATIONS

1. Qi, Y., et al. 2016. DNA polymerase κ is a key cellular factor for the formation of covalently closed circular DNA of hepatitis B virus. *PLoS Pathog.* 12: e1005893.
2. Tonzi, P., et al. 2018. Translesion polymerase κ -dependent DNA synthesis underlies replication fork recovery. *Elife* 7: e41426.
3. Thakar, T., et al. 2020. Ubiquitinated-PCNA protects replication forks from DNA2-mediated degradation by regulating Okazaki fragment maturation and chromatin assembly. *Nat. Commun.* 11: 2147.
4. Coleman, K.E., et al. 2022. USP1-trapping lesions as a source of DNA replication stress and genomic instability. *Nat. Commun.* 13: 1740.
5. Kanao, R., et al. 2022. RFWD3 and translesion DNA polymerases contribute to PCNA modification-dependent DNA damage tolerance. *Life Sci. Alliance* 5: e202201584.

RESEARCH USE

For research use only, not for use in diagnostic procedures.