SANTA CRUZ BIOTECHNOLOGY, INC.

UDG (k1C12): sc-73639

The Power to Question

BACKGROUND

When misincorporation or cytosine deamination positions the RNA nucleotide uracil into DNA, uracil-DNA gycosylase (UDG) excises the uracil via a repair enzymatic pathway. This is done by cleaving the N-C1' gylcosylic bond between the base and deoxyribose, in both single and double-stranded DNA. While initiating the first steps of DNA repair, UDG undergoes a conformational change from the "open" unbound state to the "closed" DNA-bound state, creating a catalytic center. The bound UDG effectively flips the uridine nucleotide into the catalyic center and cleaves the glycosylic bond to excise the uracil. The open-to-closed conformation change is centered on a B zipper in the UDG. UDG alters the orientation electron orbitals to favor electron transpositions, thus taking advantage of conformational strain to catapult the cleavage of the gylcosylic bond. Two isoforms of UDG, UDG1 and UDG1A, have been characterized. The UDG1 isoform localizes to the mitochondria. UDG1A is a processed isoform containing a unique 44 residue amino-terminus which localizes this isoform to the nucleus.

REFERENCES

1. Aasland, R., et al. 1990. Chromosomal assignment of human uracil-DNA glycosylase to chromosome 12. Genomics 7: 139-141.
2. Slupphaug, G., et al. 1995. Properties of a recombinant human uracil-DNA glycosylase from the UNG gene and evidence that UNG encodes the major uracil-DNA glycosylase. Biochemistry 34: 128-138.
3. Slupphaug, G., et al. 1996. A nucleotide-flipping mechanism from the structure of human uracil-DNA glycosylase bound to DNA. Nature 384: 87-92.
4. Parikh, S.S., et al. 1997. Base excision repair enzyme family portrait: integrating the structure and chemistry of an entire DNA repair pathway. Structure 5: 1543-1550.
5. Parikh, S.S., et al. 1998. Base excision repair initiation revealed by crystal structures and binding kinetics of human uracil-DNA glycosylase with DNA. EMBO J. 17: 5214-5226.
6. Lindahl, T., et al. 1999. Quality control by DNA repair. Science 286: 1897-1905.
7. Putnam, C.D., et al. 1999. Protein mimicry of DNA from crystal structures of the uracil-DNA glycosylase inhibitor protein and its complex with *Escherichia coli* uracil-DNA glycosylase. J. Mol. Biol. 287: 331-346.

CHROMOSOMAL LOCATION

Genetic locus: UNG (human) mapping to 12q24.11.

SOURCE

UDG (k1C12) is a mouse monoclonal antibody raised against amino acids 1-313 of recombinant UDG of human origin.

PRODUCT

Each vial contains 50 µg IgG_{2b} in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin and 1% glycerol.

APPLICATIONS

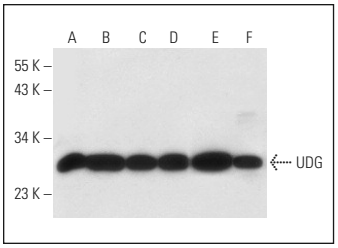
UDG (k1C12) is recommended for detection of UDG of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for UDG siRNA (h): sc-37803, UDG shRNA Plasmid (h): sc-37803-SH and UDG shRNA (h) Lentiviral Particles: sc-37803-V.

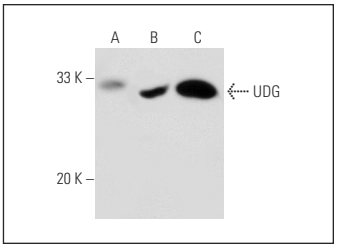
Molecular Weight of UDG: 34 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, JAR cell lysate: sc-2276 or UDG (h2): 293T Lysate: sc-116418.

DATA



UDG (k1C12): sc-73639. Western blot analysis of UDG expression in HeLa (**A**), JAR (**B**), Ca Ski (**C**), WI-38 (**D**) and Hs68 (**E**) whole cell lysates and HeLa nuclear extract (**F**).



UDG (k1C12): sc-73639. Western blot analysis of UDG expression in non-transfected 293T: sc-117752 (**A**), human UDG transfected 293T: sc-116418 (**B**) and NTERA-2 cl.D1 (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Adamsen, B.L., et al. 2011. DNA damage signaling in response to 5-fluorouracil in three colorectal cancer cell lines with different mismatch repair and TP53 status. Int. J. Oncol. 39: 673-682.

STORAGE

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

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.