SANTA CRUZ BIOTECHNOLOGY, INC.

UDG (h2): 293T Lysate: sc-116418

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. UDG excises uracil 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. The gene encoding for human UDG maps to chromosome 12q24.11.

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. Biochem. 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.

PRODUCT

UDG (h2): 293T Lysate represents a lysate of human UDG transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

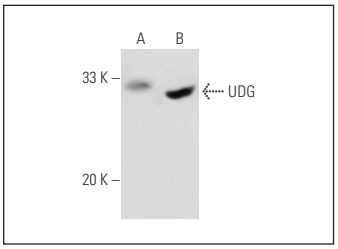
APPLICATIONS

UDG (h2): 293T Lysate is suitable as a Western Blotting positive control for human reactive UDG antibodies. Recommended use: 10-20 µl per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

UDG (k1C12): sc-73639 is recommended as a positive control antibody for Western Blot analysis of enhanced human UDG expression in UDG transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

DATA



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

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.