SANTA CRUZ BIOTECHNOLOGY, INC.

GADD 45α (1-165): sc-4100 WB

BACKGROUND

It is well established that cell cycle progression is subject to arrest at G_1 and G_2 checkpoints in response to DNA damage, presumably to allow time for DNA repair prior to entry into S and M phase, respectively. The p53 tumor suppressor is required for one such G_1 checkpoint and functions to upregulate expression of GADD 45α and p21. p21 functions to inhibit the kinase activity of multiple Cdk complexes which may account for its suppression of cell growth. GADD 45α binds both Cdks and PCNA, a protein involved in DNA replication and repair. GADD 45α has been shown to stimulate DNA excision repair *in vitro* and to inhibit entry of cells into S phase. Thus, it has been suggested that GADD 45α may serve as a link between p53-dependent cell cycle checkpoint and DNA repair.

REFERENCES

1. Murray, A.W. 1992. Creative blocks: cell-cycle checkpoints and feedback controls. Nature 359: 599-604.
2. Kuerbitz, S.J., et al. 1992. Wild-type p53 is a cell cycle checkpoint determinant following irradiation. Proc. Natl. Acad. Sci. USA 89: 7491-7495.
3. Kastan, M.B., et al. 1992. A mammalian cell cycle checkpoint pathway utilizing p53 and GADD 45α is defective in ataxia-telangiectasia. Cell 71: 587-597.
4. Harper, J.W., et al. 1993. The p21 Cdk-interacting protein Cip1 is a potent inhibitor of G_1 cyclin-dependent kinases. Cell 75: 805-816.
5. El-Deiry, W.S., et al. 1994. Waf1/Cip1 is induced in p53-mediated G_1 arrest and apoptosis. Cancer Res. 54: 1169-1174.
6. Michieli, P., et al. 1994. Induction of WAF1/Cip1 by a p53-independent pathway. Cancer Res. 54: 3391-3395.
7. Marx, J. 1994. New link found between p53 and DNA repair. Science 266: 1321-1322.
8. Smith, M.L., et al. 1994. Interaction of the p53-regulated protein GADD 45α with proliferating cell nuclear antigen. Science 266: 1376-1379.

CHROMOSOMAL LOCATION

Genetic locus: GADD45A (human) mapping to 1p31.3; Gadd45a (mouse) mapping to 6 C1.

SOURCE

GADD 45α (1-165) is expressed in *E. coli* as a 25 kDa polyhistidine tagged fusion protein corresponding to amino acids 1-165 representing full length GADD 45α of human origin.

PRODUCT

GADD 45α (1-165) is purified from bacterial lysates (>98%) by Ni^{++} affinity chromatography; supplied as 10 µg in 0.1 ml SDS-PAGE loading buffer.

PROTOCOLS

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

APPLICATIONS

GADD 45α (1-165) is suitable as a Western blotting control for sc-792, sc-796, sc-797, sc-6850 and sc-48394.

Molecular Weight of GADD 45α: 18 kDa.

SELECT PRODUCT CITATIONS

1. Kovalsky, O., et al. 2001. Oligomerization of human Gadd45a protein. J. Biol. Chem. 276: 39330-39339.
2. Welters, H.J., et al. 2006. Conditional expression of hepatocyte nuclear factor-1β, the maturity-onset diabetes of the young-5 gene product, influences the viability and functional competence of pancreatic β-cells. J. Endocrinol. 190: 171-181.
3. Ossetrova, N.I., et al. 2009. Multiple blood-proteins approach for early-response exposure assessment using an in vivo murine radiation model. Int. J. Radiat. Biol. 85: 837-850.

STORAGE

Store at -20° C; stable for one year from the date of shipment.

RESEARCH USE

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