SANTA CRUZ BIOTECHNOLOGY, INC.

GAL4 (DBD-1-147): sc-4050

BACKGROUND

The GAL4 protein of *Saccharomyces cerevisiae* is one of the most thoroughly characterized transcriptional activators. Since the N-terminal 147 amino acid residues of GAL4 are sufficient to mediate specific and strong binding to DNA, but are incapable of efficient transcriptional activation, this protein fragment has frequently been used to confer specific DNA binding in experiments examining transcriptional activation functions of heterologous proteins. This approach is facilitated by the finding that higher eukaryotes lack endogenous proteins that enhance transcription from the consensus GAL4-binding site. Fusions between GAL4 (amino acids 1-147) and activating domains from a variety of transcriptional regulatory proteins can activate transcription in yeast, plant, insects and mammalian cells. Fields and coworkers have taken advantage of these findings by the development of a unique "two-hybrid" system using GAL4 fusions in yeast to identify specific protein-protein interactions.

REFERENCES

1. Johnston, M. 1987. A model fungal gene regulatory mechanism: the GAL genes of *Saccharomyces cerevisiae.* Microbiol. Rev. 51: 458-476.
2. Ma, J. and Ptashne, M. 1987. Deletion analysis of GAL4 defines two transcriptional activating segments. Cell 48: 847-853.
3. Fields, S. and Song, O. 1989. A novel genetic system to detect protein-protein interactions. Nature 340: 245-246.
4. Ptashne, M. and Gann, A.A.F. 1990. Activators and targets. Nature 346: 329-331.
5. Song, O., et al. 1991. Pheromone-dependent phosphorylation of the yeast STE12 protein correlates with transcriptional activation. Genes Dev. 5: 741-750.
6. Chien, C., et al. 1991. The two-hybrid system; a method to identify and clone genes for proteins that interact with a protein of interest. Proc. Natl. Acad. Sci. USA 88: 9578-9582.
7. Sadowski, I., et al. 1992. GAL4 fusion vectors for expression in yeast or mammalian cells. Gene 118: 137-141.

SOURCE

GAL4 (DBD-1-147) is expressed in *E. coli* as a 42 kDa tagged fusion protein corresponding to amino acids 1-147 mapping within the GAL4 DNA-binding domain.

PRODUCT

GAL4 (DBD-1-147) and purified from bacterial lysates (> 98%) by glutathione agarose affinity column chromatography; supplied as 50 µg protein in PBS containing 5 mM DTT and 50% glycerol.

PROTOCOLS

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

APPLICATIONS

GAL4 (DBD-1-147) is recommended as a control for gel shift studies using GAL4 consensus oligonucleotide probes. GAL4 (DBD-1-147) is suitable as a Western blotting control for sc-510 and sc-166317.

SELECT PRODUCT CITATIONS

1. Zhang, Z., et al. 2000. Estrogen receptor-related receptor 1 interacts with coactivator and constitutively activates the estrogen response elements of the human lactoferrin gene. J. Biol. Chem. 275: 20837-20846.
2. Ghosh, M.K., et al. 2002. Design and structural analysis of hairpin-TFO for transcriptional activation of genes in *S. cerevisiae*. J. Biomol. Struct. Dyn. 20: 265-273.
3. Kühnel, F., et al. 2004. Tumor-specific adenoviral gene therapy: transcriptional repression of gene expression by utilizing p53-signal transduction pathways. Cancer Gene Ther. 11: 28-40.
4. Richards, M.C., et al. 2004. Novel mutations in the KCNQ2 gene link epilepsy to a dysfunction of the KCNQ2-calmodulin interaction. J. Med. Genet. 41: e35.
5. Dong, X. 2005. Identification and characterization of the protein-associated splicing factor as a negative co-regulator of the progesterone receptor. J. Biol. Chem. 280: 13329-13340.
6. Huang, F., et al. 2018. Bromodomain-containing protein 4-independent transcriptional activation by autoimmune regulator (AIRE) and NFκB. J. Biol. Chem. 293: 4993-5004.

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.