

Tra-3 (cN-15): sc-15663

BACKGROUND

Sex determination is controlled by regulatory genes, such as the genes for the sex-determining transformer proteins (tra) in *Caenorhabditis elegans*. The TRA-1 and TRA-2 genes are regulators that promote female development; TRA-1 is a terminal control gene, with TRA-2 acting upstream for somatic sex determination. Two TRA-1 mRNAs are expressed as a result of alternative splicing. One mRNA encodes a longer transcription factor with five zinc fingers that is essential for Tra-1 activity; the other protein with only the first two zinc fingers is present in abundance in the second larval stage. Tra-1 binds to the intracellular domain of the Tra-2 membrane protein. Mab-3 (male abnormal 3) acts downstream of Tra-1 and is required for sexual differentiation. Fog-3, which is required for germ cells to become sperm rather than oocytes, is a target of Tra-1 to regulate Fog-3 transcription. Tra-3 is required for the correct sexual development of the soma and germ line in hermaphrodites, but is fully dispensable in males. The TRA-3 gene product is a member of the calpain family of calcium-regulated cytosolic proteases. TRA-3, which has calcium-dependent proteolytic activity, cleaves TRA-2A to generate a peptide, which has feminizing activity.

REFERENCES

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- Zarkower, D. and Hodgkin, J. 1993. Zinc fingers in sex determination: only one of the two *C. elegans* Tra-1 proteins binds DNA *in vitro*. *Nucleic Acids Res.* 21: 3691-3698.
- Barnes, T.M. and Hodgkin, J. 1996. The TRA-3 sex determination gene of *Caenorhabditis elegans* encodes a member of the calpain regulatory protease family. *EMBO J.* 15: 4477-4484.
- Sokol, S.B. and Kuwabara, P.E. 2000. Proteolysis in *Caenorhabditis elegans* sex determination: cleavage of TRA-2A by TRA-3. *Genes Dev.* 14: 901-906.
- Chen, P. and Ellis, R.E. 2000. Tra-1A regulates transcription of Fog-3, which controls germ cell fate in *C. elegans*. *Development* 127: 3119-3129.
- Yi, W., Ross, J.M. and Zarkower, D. 2000. MAB-3 is a direct TRA-1 target gene regulating diverse aspects of *C. elegans* male sexual development and behavior. *Development* 127: 4469-4480.
- Wang, S. and Kimble, J. 2001. The Tra-1 transcription factor binds Tra-2 to regulate sexual fate in *Caenorhabditis elegans*. *EMBO J.* 20: 1363-1372.

SOURCE

Tra-3 (cN-15) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus of Tra-3 of *C. elegans* origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-15663 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Tra-3 (cN-15) is recommended for detection of Tra-3 of *Caenorhabditis elegans* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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 or our catalog for detailed protocols and support products.