

# TYW1 (W-13): sc-104721

## BACKGROUND

Wybutosine, a derivative of wyosine, is a tricyclic hypermodified guanosine found in eukaryotic and archaeal tRNAs. TYW1 (tRNA-γW synthesizing protein 1), also known as TYW1A, RSAFD1 or YPL207W, is a 732 amino acid protein containing one flavodoxin-like domain that participates in the wybutosine-tRNA(Phe) biosynthesis pathway. Involved in tRNA modification, TYW1 is the human homolog of a yeast gene essential for γW synthesis. TYW1 is involved in a multistep enzymatic reaction that stabilizes codon-anticodon base-pairing during the ribosomal decoding process, thereby ensuring correct translation. TYW1 binds to one 4Fe-4S cluster and exists as two alternatively spliced isoforms. The gene encoding TYW1 is located on human chromosome 7, which houses over 1,000 genes and comprises nearly 5% of the human genome. Defects in some of the genes localized to chromosome 7 have been linked to osteogenesis imperfecta, Williams-Beuren syndrome, Pendred syndrome, lissencephaly, citrullinemia and Shwachman-Diamond syndrome.

## REFERENCES

- Hillier, L.W., Fulton, R.S., Fulton, L.A., Graves, T.A., Pepin, K.H., Wagner-McPherson, C., Layman, D., Maas, J., Jaeger, S., Walker, R., Wylie, K., Sekhon, M., Becker, M.C., et al. 2003. The DNA sequence of human chromosome 7. *Nature* 424: 157-164.
- Noma, A., Kirino, Y., Ikeuchi, Y. and Suzuki, T. 2006. Biosynthesis of wybutosine, a hyper-modified nucleoside in eukaryotic phenylalanine tRNA. *EMBO J.* 25: 2142-2154.
- Noma, A. and Suzuki, T. 2006. Ribonucleome analysis identified enzyme genes responsible for wybutosine synthesis. *Nucleic Acids Symp. Ser.* 65-66.
- Agris, P.F., Vendeix, F.A. and Graham, W.D. 2007. tRNA's wobble decoding of the genome: 40 years of modification. *J. Mol. Biol.* 366: 1-13.
- Goto-Ito, S., Ishii, R., Ito, T., Shibata, R., Fusatomi, E., Sekine, S.I., Bessho, Y. and Yokoyama, S. 2007. Structure of an archaeal TYW1, the enzyme catalyzing the second step of wye-base biosynthesis. *Acta Crystallogr. D Biol. Crystallogr.* 63: 1059-1068.
- Suzuki, Y., Noma, A., Suzuki, T., Senda, M., Senda, T., Ishitani, R. and Nureki, O. 2007. Crystal structure of the radical SAM enzyme catalyzing tricyclic modified base formation in tRNA. *J. Mol. Biol.* 372: 1204-1214.
- Suzuki, Y., Noma, A., Suzuki, T., Ishitani, R. and Nureki, O. 2009. Structural basis of tRNA modification with CO<sub>2</sub> fixation and methylation by wybutosine synthesizing enzyme TYW4. *Nucleic Acids Res.* 37: 2910-2925.

## CHROMOSOMAL LOCATION

Genetic locus: TYW1 (human) mapping to 7q11.21; Tyw1 (mouse) mapping to 5 G1.3.

## SOURCE

TYW1 (W-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of TYW1 of human 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-104721 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

TYW1 (W-13) is recommended for detection of TYW1 of mouse, rat and human 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); non cross-reactive with isoform TYW1-2.

TYW1 (W-13) is also recommended for detection of TYW1 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for TYW1 siRNA (h): sc-89803, TYW1 siRNA (m): sc-106652, TYW1 shRNA Plasmid (h): sc-89803-SH, TYW1 shRNA Plasmid (m): sc-106652-SH, TYW1 shRNA (h) Lentiviral Particles: sc-89803-V and TYW1 shRNA (m) Lentiviral Particles: sc-106652-V.

Molecular Weight of TYW1: 84 kDa.

## 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](http://www.scbt.com) or our catalog for detailed protocols and support products.