

PIWI (d-190): sc-98264

BACKGROUND

The PIWI family is an evolutionarily conserved gene family that plays an essential role in stem cell self-renewal, gametogenesis, and RNA interference in diverse organisms. In the *Drosophila ovary*, PIWI is required for the asymmetric division of germline stem cells (GSCs) to produce and maintain a daughter GSC, but is not essential for the further differentiation of the committed daughter cell. PIWI is a highly basic nucleoplasmic protein present in both somatic and germline cells, with the highly conserved C-terminal region essential for its function. Removing PIWI protein from single germline stem cells significantly decreases the rate of their division, suggesting that PIWI has a second role as a cell-autonomous promoter of germline stem cell division. Consistent with its dual function, over-expression of PIWI in somatic cells causes an increase both in the number of germline stem cells and the rate of their division. Thus, PIWI is a key regulator of stem cell division; its somatic expression modulates the number of germline stem cells and the rate of their division, while its germline expression also contributes to promoting stem cell division in a cell-autonomous manner.

REFERENCES

1. Qiao, D., Zeeman, A.M., Deng, W., Looijenga, L.H. and Lin, H. 2002. Molecular characterization of HIWI, a human member of the PIWI gene family whose overexpression is correlated to seminomas. *Oncogene* 21: 3988-3999.
2. Kuramochi-Miyagawa, S., Kimura, T., Yomogida, K., Kuroiwa, A., Tadokoro, Y., Fujita, Y., Sato, M., Matsuda, Y. and Nakano, T. 2001. Two mouse PIWI-related genes: Miwi and Mili. *Mech. Dev.* 108: 121-133.
3. Cox, D.N., Chao, A., Baker, J., Chang, L., Qiao, D. and Lin, H. 1998. A novel class of evolutionarily conserved genes defined by PIWI are essential for stem cell self-renewal. *Genes Dev.* 12: 3715-3727.
4. Kennerdell, J.R., Yamaguchi, S. and Carthew, R.W. 2002. RNAi is activated during *Drosophila* oocyte maturation in a manner dependent on aubergine and spindle-E. *Genes Dev.* 16:1884-1889.
5. Cox, D.N., Chao, A. and Lin, H. 2000. PIWI encodes a nucleoplasmic factor whose activity modulates the number and division rate of germline stem cells. *Development* 127: 503-514.

SOURCE

PIWI (d-190) is a rabbit polyclonal antibody raised against amino acids 1-190 mapping at the N-terminus of PIWI of *Drosophila melanogaster* origin.

PRODUCT

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

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.

APPLICATIONS

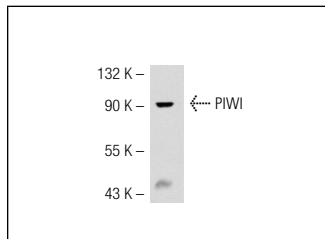
PIWI (d-190) is recommended for detection of PIWI of *Drosophila melanogaster* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of PIWI: 97 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



PIWI (d-190): sc-98264. Western blot analysis of PIWI expression in Schneider's *Drosophila* line 2 whole cell lysate.

PROTOCOLS

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Try **PIWI (G-1): sc-390946**, our highly recommended monoclonal alternative to PIWI (d-190).