

Oct-3/4 (1-134): sc-4420 WB

BACKGROUND

POU5F1 (POU domain, class 5, transcription factor 1), also known as octamer-binding transcription factor-3 (Oct-3, Otf-3), octamer-binding transcription factor-4 (Oct-4, Otf-4) and Oct-3/4, modulates embryonic stem (ES) cell populations by influencing lineage commitment. Oct-3/4 sustains stem-cell self-renewal and differentiation pathways. Transcription factors containing the POU homeodomain regulate tissue-specific gene expression in lymphoid and pituitary differentiation and in early mammalian development. Oct-3/4 is capable of inducing rapid proliferation and tumorigenic properties of ES cells through activation of the UTF1 gene. In humans, two Oct-3/4 isoforms contribute to influencing the undifferentiated phenotype of ES cells. Oct-3/4 pseudogenes localizing to human chromosomes 10 and 8 are reported to be transcribed in certain cancer cell lines and tissues.

REFERENCES

1. Takeda, J., Seino, S. and Bell, G.I. 1992. Human Oct3 gene family: cDNA sequences, alternative splicing, gene organization, chromosomal location, and expression at low levels in adult tissues. *Nucleic Acids Res.* 20: 4613-4620.
2. Guillaudeux, T., Mattei, M.G., Depetris, D., Le Bouteiller, P. and Pontarotti, P. 1993. *In situ* hybridization localizes the human OTF3 to chromosome 6p21.3→p22 and OTF3L to 12p13. *Cytogenet. Cell Genet.* 63: 212-214.
3. Nichols, J., Zevnik, B., Anastasiadis, K., Niwa, H., Klewe-Nebenius, D., Chambers, I., Scholer, H. and Smith, A. 1998. Formation of pluripotent stem cells in the mammalian embryo depends on the POU transcription factor Oct4. *Cell* 95: 379-391.
4. Niwa, H., Miyazaki, J. and Smith, A.G. 2000. Quantitative expression of Oct-3/4 defines differentiation, dedifferentiation or self-renewal of ES cells. *Nat. Genet.* 24: 372-376.
5. Hattori, N., Nishino, K., Ko, Y.G., Hattori, N., Ohgane, J., Tanaka, S. and Shiota, K. 2004. Epigenetic control of mouse Oct-4 gene expression in embryonic stem cells and trophoblast stem cells. *J. Biol. Chem.* 279: 17063-17069.
6. Hochedlinger, K., Yamada, Y., Beard, C. and Jaenisch, R. 2005. Ectopic expression of Oct-4 blocks progenitor-cell differentiation and causes dysplasia in epithelial tissues. *Cell* 121: 465-477.
7. Lee, J., Rhee, B.K., Bae, G.Y., Han, Y.M. and Kim, J. 2005. Stimulation of Oct-4 activity by Ewing's sarcoma protein. *Stem Cells* 23: 738-751.
8. Tondreau, T., Meuleman, N., Delforge, A., Dejefeffe, M., Leroy, R., Massy, M., Mortier, C., Bron, D. and Lagneaux, L. 2005. Mesenchymal stem cells derive from CD133 positive cells in mobilized peripheral blood and cord blood: proliferation, Oct-4 expression and plasticity. *Stem Cells* 23: 1105-1112.

CHROMOSOMAL LOCATION

Genetic locus: POU5F1 (human) mapping to 6p21.33; Pou5f1 (mouse) mapping to 17 B1.

STORAGE

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

SOURCE

Oct-3/4 (1-134) is expressed in *E. coli* as a 42 kDa tagged fusion protein corresponding to amino acids 1-134 of Oct-3/4 of human origin.

PRODUCT

Oct-3/4 (1-134) is purified from bacterial lysates (> 98%) by glutathione agarose chromatography and supplied as 10 µg in 0.1 ml SDS-PAGE loading buffer.

APPLICATIONS

Oct-3/4 (1-134) is recommended for use as a Western blotting control for sc-5279, sc-8628 and sc-9081.

Molecular Weight of Oct-3/4: 42 kDa.

SELECT PRODUCT CITATIONS

1. Vejlsted, M., Avery, B., Gjørret, J.O. and Maddox-Hyttel, P. 2005. Effect of leukemia inhibitory factor (LIF) on *in vitro* produced bovine embryos and their outgrowth colonies. *Mol. Reprod. Dev.* 70: 445-454.
2. Vejlsted, M., Avery, B., Schmidt, M., Greve, T., Alexopoulos, N. and Maddox-Hyttel, P. 2005. Ultrastructural and immunohistochemical characterization of the bovine epiblast. *Biol. Reprod.* 72: 678-686.
3. Zhang, Y.W., Denham, J. and Thies, R.S. 2006. Oligodendrocyte progenitor cells derived from human embryonic stem cells express neurotrophic factors. *Stem Cells Dev.* 15: 943-952.
4. Kaltz, N., Funari, A., Hippauf, S., Delorme, B., Noël, D., Riminucci, M., Jacobs, V.R., Häupl, T., Jorgensen, C., Charbord, P., Peschel, C., Bianco, P. and Oostendorp, R.A. 2008. *In vivo* osteoprogenitor potency of human stromal cells from different tissues does not correlate with expression of POU5F1 or its pseudogenes. *Stem Cells* 26: 2419-2424.

RESEARCH USE

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

PROTOCOLS

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