CELL APPLICATIONS, INC.

MSX2 Antibody

Cat. No. CY1121

Applications:	**WB**
Detected MW:	**30 kDa**
Species & Reactivity:	**Human, Mouse, Rat**
Isotype:	**Rabbit IgG**

BACKGROUND

Homeobox genes are important during embryonic development, where they function to control cell fate and positioning, thereby regulating the morphological development of several organs, including skeletal structures, the heart, teeth, eyes and mammary glands. The homeobox family of transcription factors was originally isolated from *Drosophila* and contains a common 61-amino acid domain, known as the homeodomain, which can directly bind DNA and regulate gene transcription. Msx2 is a member of the vertebrate homologues of the Drososophila muscle-segment homeobox gene family (*msh*/Msx). The mammalian *Msx* gene family consists of 3 physically unlinked members, named *Msx1*, *Msx2*, and *Msx3*. *Msx3* is only expressed in the dorsal neural tube, in a pattern resembling that of the prototypical *Drosophila msh* gene. However, in developing vertebrate embryos, *Msx1* and *Msx2* are widely expressed in many organs; particularly at the sites where epithelial-mesenchymal interactions take place. Most notably, *Msx1* and *Msx2* are strongly expressed in the developing craniofacial regions in an overlapping manner to some extent, indicating a role for *Msx* genes in craniofacial development.[1]

Msx2 is a major regulator of developmental pathways during embryogenesis of different organs including craniofacial structures, limb, neural tube and mammary gland. In all these different tissues, Msx2 is expressed at the sites of epithelial-mesenchymal inductive interactions mediating the signaling between the two different tissues. In the mammary gland, Msx2 expression is hormonally regulated and promotes early branching morphogenesis of the mammary epithelium.[2] Mutations in the muscle segment homeobox 2 (Msx2) homeodomain which cause loss or gain of Msx2 DNA binding activity can both result in cranial defects. Msx2 function can also be affected by subcellular localization and protein-protein interactions. Homeobox genes, when deregulated, can contribute to carcinogenesis and Msx genes may be deregulated in many types of epithelial cancers such as mammary carcinomas. MSX2 has been implicated to have a role in breast and pancreatic cancer. Studies showed that increased Msx2 results in improved outcome for breast cancer patients, possibly by increasing the likelihood of tumor cell death by apoptosis. Moreover, it was shown that MSX2 may be an important regulator of melanoma cell invasion and survival. Cytoplasmic expression of the protein was identified as biomarker for good prognosis in malignant melanoma patients.[3]

References:

1. Alappat, S. et al: Cell Res. 13:429-42, 2003
2. di Bari, M.G. et al: J. Cell. Physiol. 219:659–66, 2009
3. Gremel, G. et al: Br. J. Cancer 105:565-74, 2011

TECHNICAL INFORMATION

Source:
MSX2 Antibody is a rabbit antibody raised against purified recombinant human MSX2 proteins expressed in *E. coli*.

Specificity and Sensitivity:
This antibody detects MSX2 proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

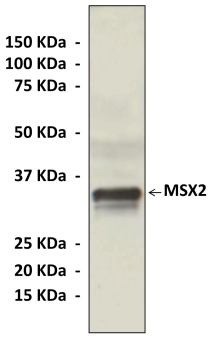
Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000-10,000
IP	n/d
IHC	n/d
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

QUALITY CONTROL DATA



Western Blot detection of MSX2 proteins in mouse liver lysate using MSX2 Antibody.