

## BACKGROUND

Krüppel-like factor 4 (KLF4/GKLF/EZF) is a member of transcription factor family called Krüppel-like factors, which gets its name from a homology to the *Drosophila* Krüppel protein. Members of this family have been studied for their roles in cell proliferation, differentiation and survival, especially in the context of cancer.

KLF4 consists of 483 aa and contains three Krüppel-type zinc fingers in the very C-terminal end. The region immediately N-terminal to the three zinc fingers is a 20-aa peptide containing a cluster of basic aa residues, which is essential for the nuclear localization of the protein.<sup>1</sup> KLF4 can both activate and repress genes that are involved in cell-cycle regulation and differentiation. Among the KLF4-regulated cell-cycle genes, many upregulated genes are inhibitors of proliferation, whereas genes that promote proliferation are repressed.<sup>2</sup> This indicates that KLF4 regulates the expression of a set of cell-cycle genes for coordinated inhibition of cellular proliferation.<sup>3</sup>

In addition, KLF4 was found involved in tumor development. Subject to the presence or absence of different cellular factors, KLF4 can switch from a growth-inhibiting tumor suppressor to a growth-promoting oncogene.<sup>2</sup>

KLF4 also interacts with the p300/CBP transcription co-activators. The closely-related p300 and CBP interact with numerous transcription factors and increase the expression of target genes. These transcription factors are also involved with cancer.

Recently it has been possible to reverse the highly differentiated state of somatic cells back to a pluripotent state with a combination of four transcription factors. In one study, Klf4 was one of the reprogramming factors used for cell reprogramming, in conjunction with Oct4, Sox2 and c-Myc. Another team used Oct3/4, Sox2, Nanog and Lin28.<sup>4,5</sup> Maintenance of self-renewal and pluripotency of ES cells requires Oct4, Sox2 and c-Myc, but Klf4 is dispensable.

Klfs were found to regulate the Nanog gene and other key genes that must be active for ES cells to be pluripotent, or capable of differentiating into virtually any type of cells. The Nanog gene is one of the key pluripotency genes in ES cells.

### References:

1. Feinberg MW et al.: Trends Cardiovasc Med. 14:241-6, 2004.
2. Rowland BD et al.: Nature Cell Biol.7:1074-1082, 2005.
3. Dang DT et al.: Int J Biochem Cell Biol. 32:1103-21, 2000.
4. Takahashi K et al.: Cell 131:861-72, 2007.
5. Yu J et al.: Science. 318:1917-20, 2007.

## TECHNICAL INFORMATION

### Source:

KLF4 Antibody is a mouse monoclonal antibody raised against recombinant human KLF4 proteins expressed in *E. coli*.

### Specificity and Sensitivity:

This monoclonal antibody detects endogenous levels of KLF4 proteins in normal primary cell lysates.

**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.

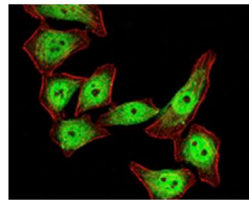
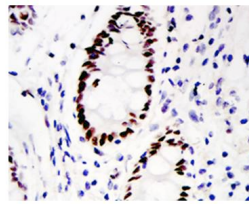
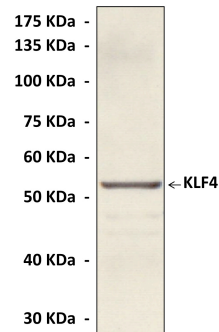
## APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	1:50
IHC	1:100
ICC	n/d
FACS	n/d

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



## QUALITY CONTROL DATA



**Top:** Western blot detection of endogenous KLF4 proteins in mouse neural stem cells (MNSC) (cat# MS820K-20f) using KLF4 Antibody. **Middle:** This antibody stains paraffin-embedded human lung cancer tissue in immunohistochemical analysis. **Bottom:** It also specifically reacts Klf4 proteins in ECA109 cells by confocal immunofluorescent detection (Klf4 antibody: Green; Actin filaments: Red).

