BACKGROUND

Keratins belong to the family of intermediate filament proteins that are specifically expressed in epithelia. They have a remarkable ability to polymerize into 10nm filaments without the participation of auxiliary proteins. They comprise a total of about 30 genes (including those of hair and nails, the trichocytic keratins) grouped into two types; type I are smaller (40–56.5kDa) and acidic (pI<7.0), whereas type II are larger (53–67kDa) and basic/neutral (pI $\geq$7.0). The type I keratins include K9–K20 and the type II include K1–K8. The amino acid sequence of keratins is highly conserved in the central rod domain of the polypeptides and forms an alpha-helical structure. During filament assembly, two keratin polypeptides, one of each type, first form a parallel heterodimer, in which the rod domains assemble into coiled-coil, which then undergoes further associations with other dimers to produce tetramers. The association of tetramers produces protofilaments and finally mature filaments.[1] Although any type I keratin can form heterotypic complexes with any type II keratin *in vitro* and assemble into filaments in fibroblasts, keratins are often expressed in specific pairs in an epithelial tissue that are unique to that differentiation pathway. The keratinocytes in the mitotically active basal layer always express K5 and K14, and upon commitment to differentiation the basal keratinocytes exit from the cell-cycle and move into the suprabasal compartment. The commitment to differentiation, which is mostly irreversible, involves major changes in the cytoarchitechture in which keratinocytes are flattened, lose their organelles and nuclei, and their protein contents are cross-linked into a cornified envelope. These changes in keratinocytes are accompanied by a switch in keratin gene expression. The migrating keratinocytes downregulate K5/K14 transcription and activate expression of a new set of keratin pairs that vary among stratified tissues. In cornified epithelia, such as those covering skin and gingivae, the differentiating keratinocytes express K1/K10, whereas in noncornified squamous epithelia expression of K4/K13 is induced and in cornea the migrating keratinocytes activate K3/K12 expression. The K6/K16 pair is constitutively expressed in the outer root sheath of hair follicles and in mucosal epithelia of oral cavity, esophagus, and female genital tract; however, in epidermal hyperproliferation, such as in psoriasis and during wound healing, expression of this pair is activated.[2]

Keratin 15 is a type I keratin that does not appear to have a natural type II expression partner. Keratin 15 is expressed in all layers of stratified epithelia, including the fetal epidermis and fetal nail. The K15 expression starts in the basal layer but is independent of the vertical differentiation of migrating keratinocytes. Recent studies, however, have shown that Keratin 15 is not expressed in the suprabasal layer but instead is specifically localized in the basal keratinocytes. The fact that Keratin 15 is regarded as specific for basal keratinocytes. Moreover, it was shown that keratin 15 can be used as a specific marker for stem cells of the hair-follicle bulge. In addition, it was also shown that the Keratin 15 gene is upregulated in human subjects where both alleles for Keratin 14 have been inactivated. In hyperproliferating conditions, in which keratinocytes are activated, the Keratin 15 protein and its mRNA are downregulated, suggesting that its expression may not be compatible with the activated phenotype.[3] Immunostaining for keratin 15 is demonstrated as a useful method for the differential diagnosis between basal cell carcinoma and trichoepithelioma. Normal epithelial cells undergo apoptosis if they lose cell-cell or cell-matrix contact, a process which has been termed anoikis. It was shown that keratin 15 and keratin 17 are specifically cleaved after induction of apoptosis into at least three distinct fragments by a caspase-dependent mechanism.[4]

References:
1. Oshima, R.G.: Cell Growth Differ. 9:486-92, 2002
2. Kirfel, J. et al: Cell. Mol. Life Sci. 60:56-71, 2003
3. Waseem, A. et al: J. Investigat. Dermatol. 112:362-9, 1999
4. Badock, V. et al: Cell Growth Differ. 8:308-15, 2001

TECHNICAL INFORMATION

Source:
Keratin 15 Antibody is a mouse monoclonal antibody raised against recombinant human Keratin 15 fragments expressed in *E. coli*.

Specificity and Sensitivity:
This antibody detects endogenous Keratin 15 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
IP	n/d
IHC	1:50-200
ICC	1:50-200
FACS	1:50-200

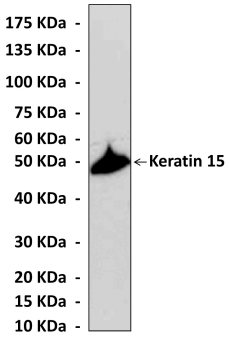
**Optimal dilutions must be determined by end user.*

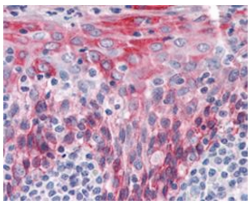
Keratin 15 Antibody

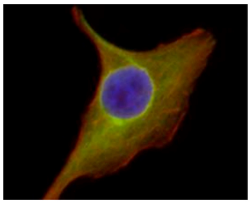
Cat. No. CP10335

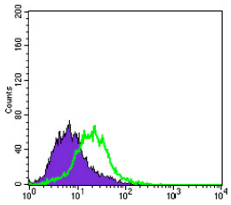
Applications:	**WB, IHC, ICC, FACS**
Detected MW:	**50 kDa**
Species & Reactivity:	**Human**
Isotype:	**Mouse IgG1**

QUALITY CONTROL DATA









Top: Western Blot detection of Keratin 15 proteins in A431 cell lysate using Keratin 15 antibody. **Middle upper:** This antibody stains paraffin-embedded human tonsil tissue in immunohistochemical analysis. **Middle lower:** It also stains PACN-1 cells in confocal immunofluorescent analysis (Keratin 15 antibody: Green; Actin filaments: Red; DRAQ5 DNA Dye: Blue). **Bottom:** This antibody specifically reacts with Keratin 15 proteins in PACN-1 cells by FACS testing (Keratin 15 antibody: green; control mouse IgG: purple).