

## BACKGROUND

PDZ-binding kinase/T-LAK cell-originated protein kinase (PBK/TOPK) is a novel MEK3/6-related MAPKK family member that phosphorylates p38 and is involved in H-Ras signaling. During mitosis, TOPK is phosphorylated at Thr9 by Cdk1/cyclin B, and phosphorylation is required for its kinase activity. Moreover, PBK /TOPK was also found to be involved in the spindle midzone formation and cytokinesis by phosphorylation of the microtubule bundling protein, PRC1 at Thr481.<sup>1</sup> TOPK expression is regulated by cell cycle-specific transcription factors E2F and CREB/ATF. TOPK is found in activated T/LAK cells, lymphoid tumor cells, and normal testicular tissue. It is highly expressed in hematologic tumors such as leukemia, lymphoma, and myeloma; and its expression corresponds with malignant potential of these tumors. TOPK is also overexpressed in breast cancer and human colorectal cancer and colorectal cancer cell lines. Recent studies suggest a role for TOPK in DNA damage sensing and repair through phosphorylation of histone H2AX.<sup>2</sup> Earlier studies showed that TOPK is involved in preventing apoptosis in melanoma cells and is a positive regulator of c-Jun-NH2-kinase 1 (JNK1) signaling and H-Ras induced cell transformation. It was reported that a positive feedback loop between TOPK and ERK2 increases the carcinogenic properties of HCT116 colorectal cancer cells, and therefore TOPK-regulated signaling might be a potential therapeutic target in colorectal cancer. Moreover, recent studies showed that the 25-kDa protein peroxiredoxin 1 (Prx1) is direct target of TOPK. TOPK phosphorylation of Prx1 at Ser32 inhibits UVB-induced apoptosis in RPMI7951 melanoma cells by increasing Prx1 peroxidase activity and decreasing the intracellular accumulation of H<sub>2</sub>O<sub>2</sub>.<sup>3</sup> In addition, it was demonstrated that PBK/TOPK may contribute to tumor cell development and progression through suppression of p53 function and consequent reductions in the cell-cycle regulatory proteins such as p21.<sup>4</sup>

### References:

1. Abe, Y. et al: J. Mol. Biol. 270:231-45, 2007
2. Zykova, T.A. et al: Clin. Cancer Res. 12:6884-93, 2006
3. Zhang, A.P. et al: Shijie Huaren Xiaohua Zazhi 17: 901-5, 2009
4. Hu, F. et al: Oncogene 2010 Jul 12. [Epub ahead of print] PMID: 20622899

## TECHNICAL INFORMATION

### Source:

PBK/TOPK Antibody is a rabbit antibody raised against a short peptide from C-terminal sequence of human PBK/TOPK.

### Specificity and Sensitivity:

This antibody detects endogenous PBK/TOPK proteins without cross-reactivity with other family members.

**Storage Buffer:** Solution in phosphate-buffered saline, pH 7.2, containing 40% glycerol and 0.02% sodium azide

### Storage:

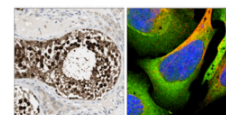
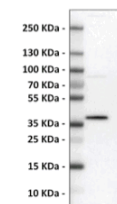
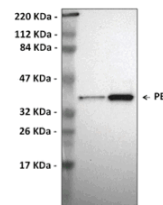
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

## APPLICATIONS

Application:	*Dilution:
WB	1:100-1:250
IP	n/d
IHC	1:50-1:200
ICC	n/d
FACS	n/d
IF	1-4 ug/mL

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

## QUALITY CONTROL DATA



**Top:** Left Lane: Marker [kDa] 220, 112, 84, 47, 32, 26, 17 Middle Lane: Human cell line RT-4 Right Lane: Human cell line U-251MG sp

**Middle:** Left Lane: NIH-3T3 cell lysate (Mouse embryonic fibroblast cells) Right Lane: NBT-II cell lysate (Rat Wistar bladder tumour cells)

**Bottom:** Immunohistochemical staining of human testis shows strong nuclear and cytoplasmic positivity in cells of seminiferous ducts (left) and Immunofluorescent staining of Human cell line U-2 OS shows positivity in cytoplasm (right).

