

# Ig $\kappa$ chain (KP-53): sc-59264

## BACKGROUND

Antibody producing cells of the immune system require multiple rearrangements of immunoglobulin (antibody, Ig) genes. Immunoglobulins are four-chain, Y-shaped, monomeric structures of two identical heavy chains and two identical light chains held together through interchain disulfide bonds. Immunoglobulins in vertebrates help to remove non-self molecules or cells (antigens) by recognizing and binding to the antigen and carrying out effector functions that activate the immune system. Variable genetic combinations of the five heavy chain classes (M, D, G, E and A) and the two light chain isotypes,  $\kappa$  and  $\lambda$ , confer the role of an antibody. The variable region genes encoding immunoglobulin  $\kappa$  and  $\lambda$  chains are assembled from three DNA segments, the V, C and J genes. Human  $\kappa$  light chain genes map to chromosome 2 and the human  $\lambda$  light chain genes map to chromosome 22.  $\kappa$  gene recombination can precede  $\lambda$  gene recombination during B cell ontogeny and only a single light chain type is expressed in individual B cells. Antibodies in camels and sharks can lack light chains, suggesting that light chains may not be essential for antigen binding in some vertebrates.

## REFERENCES

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- Mason, D.W., et al. 1981. The rat mixed lymphocyte reaction: roles of a dendritic cell in intestinal lymph and T cell subsets defined by monoclonal antibodies. *Immunology* 44: 75-87.
- Dyer, M.J., et al. 1981. Committed T lymphocyte stem cells of rats. Characterization by surface W3/13 antigen and radiosensitivity. *J. Exp. Med.* 154: 1164-1177.
- Hieter, P.A., et al. 1982. Evolution of human immunoglobulin  $\kappa$  J region genes. *J. Biol. Chem.* 257: 1516-1522.
- Durdik, J., et al. 1984. Novel  $\kappa$  light chain gene rearrangements in mouse  $\lambda$  light chain-producing B lymphocytes. *Nature* 307: 749-752.
- Horejsi, V., et al. 1986. Monoclonal antibodies against human leukocyte antigens. I. Antibodies against  $\beta$ -2-Microglobulin, immunoglobulin  $\kappa$  light chains, HLA-DR-like antigens, T8 antigen, T1 antigen, a monocyte antigen, and a pan-leukocyte antigen. *Folia Biol.* 32: 12-25.
- Pilstrom, L. 2002. The mysterious immunoglobulin light chain. *Dev. Comp. Immunol.* 26: 207-215.
- Li, M., et al. 2004. Expression of immunoglobulin  $\kappa$  light chain constant region in abnormal human cervical epithelial cells. *Int. J. Biochem. Cell Biol.* 36: 2250-2257.
- LocusLink Report (LocusID: 3514). <http://www.ncbi.nlm.nih.gov/LocusLink/>

## CHROMOSOMAL LOCATION

Genetic locus: IGKC (human) mapping to 2p25.3.

## SOURCE

Ig  $\kappa$  chain (KP-53) is a mouse monoclonal antibody raised against purified Bence Jones  $\kappa$  light chain protein of human origin.

## PRODUCT

Each vial contains 500  $\mu$ l ascites containing IgG<sub>2b</sub> with PSB with < 0.1% sodium azide.

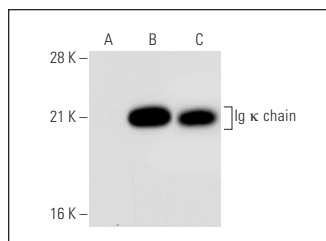
## APPLICATIONS

Ig  $\kappa$  chain (KP-53) is recommended for detection of Ig  $\kappa$  chain of human origin by Western Blotting (starting dilution to be determined by researcher, dilution range 1:10-1:200), immunoprecipitation [10-20  $\mu$ l per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution to be determined by researcher, dilution range 1:10-1:200) and immunohistochemistry (including paraffin-embedded sections) (starting dilution to be determined by researcher, dilution range 1:10-1:200); non cross-reactive with human  $\lambda$  light chains.

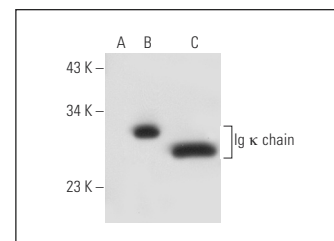
Molecular Weight of Ig  $\kappa$  chain: 28 kDa.

Positive Controls: Ig  $\kappa$  chain (h3): 293T Lysate: sc-117325, NAMALWA cell lysate: sc-2234 or U-698-M whole cell lysate: sc-364799.

## DATA



Ig  $\kappa$  chain (KP-53): sc-59264. Western blot analysis of Ig  $\kappa$  chain expression in non-transfected 293T: sc-117752 (A), human Ig  $\kappa$  chain transfected 293T: sc-117325 (B) and human PBL (C) whole cell lysates.



Ig  $\kappa$  chain (KP-53): sc-59264. Western blot analysis of Ig  $\kappa$  chain expression in non-transfected 293T: sc-117752 (A), human Ig  $\kappa$  chain transfected 293T: sc-11799 (B) and human PBL (C) whole cell lysates.

## SELECT PRODUCT CITATIONS

- Nakamura, S., et al. 2023. Single-cell transcriptome analysis reveals functional changes in tumour-infiltrating B lymphocytes after chemotherapy in oesophageal squamous cell carcinoma. *Clin. Transl. Med.* 13: e1181.

## STORAGE

For immediate and continuous use, store at 4° C for up to one month. For sporadic use, freeze in working aliquots in order to avoid repeated freeze/thaw cycles. If turbidity is evident upon prolonged storage, clarify solution by centrifugation.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.