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ProductInformation

MONOCLONAL ANTI-Ku (p70)
CLONE N3H10
Purified Mouse Immunoglobulin

Product Number **K 2763**

Product Description

Monoclonal Anti-Ku (p70) (mouse IgG2b isotype) is derived from the hybridoma produced by the fusion of splenocytes from BALB/c mice immunized with human placental extract designated as PSE1-PL and mouse myeloma NS1 and Sp2/0 cells. The antibody is purified by Protein A chromatography.

Ku (p70) is known also as Ku70, Thyroid-Lupus Autoantigen p70 or G22P1. Monoclonal Anti-Ku (p70) specifically recognizes human, monkey and *Xenopus* 70 kDa subunit of Ku. The epitope recognized by this antibody has been mapped between amino acids 506 to 541. The antibody may be used in immunoblotting, immunohistochemistry with frozen or formalin-fixed paraffin-embedded tissue sections, immunofluorescence and ELISA.

Ku autoantigen is one of a group of DNA associated autoantigens identified as targets of autoantibodies produced by patients with systemic lupus erythematosus (SLE), autoimmune thyroid disease (Graves disease), and other disorders. The available evidence indicates that the Ku (p70) is involved in organizing the genome, although its precise role remains unclear. The G22P1 gene encodes the 70 kDa subunit of the heterodimeric p70/p80 autoantigen, a 10 S DNA-binding complex. The p70/p80 dimer is important for the activity of a 460 kDa DNA-dependent protein kinase that phosphorylates a number of transcription factors including Sp1, Oct-1, p53, and SV40 large T antigen.

Molecular cloning of the p70/p80 subunits has revealed that the structure of p70 resembles that of certain transcriptional activator proteins. The DNA-binding domain of Ku autoantigen has been localized to the C-terminus of p70, whereas p80 does not appear to bind DNA, and may be involved in interactions with other proteins. There is some evidence that *in vitro* Ku may increase transcriptional activity from at least two promoters. The p70/p80 complex binds to the ends of double-stranded DNA in a cell cycle-dependent manner. Both p70 and p80 contain phosphoserine residues.[1,2]

The Ku autoantigen, as a component of DNA dependent protein kinase, plays a role in the repair of apoptotic lesions. Double-strand DNA breaks (DSBs) pose a major threat to living cells, and several mechanisms for repairing these lesions have evolved. Eukaryotes can process DSBs by homologous recombination (HR) or non-homologous end-joining (NHEJ). Research has demonstrated that Ku70 acts as a switch between the two DSB repair pathways. When present, Ku70 directs DSBs for NHEJ by binding to DNA ends and attracting other factors for NHEJ, including Mre11. When Ku70 is absent, it allows DNA ends and Mre11 to participate in the meiotic HR pathway.[3,4]

Reagent

Monoclonal Anti-Ku (p70) is supplied as a solution in phosphate buffered saline, pH 7.4, with 0.08% sodium azide as a preservative.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

Store at –20 °C. Upon initial thawing freeze the solution in working aliquots for extended storage. Avoid repeated freezing and thawing to prevent denaturing the antibody. Do not store in a frost-free freezer. The antibody is stable for at least 12 months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

Product Profile

A recommended working concentration of 1 to 2 µg/ml is determined by immunohistochemistry using Anti-Ku (p70) antibody on formalin-fixed, paraffin embedded human tonsil tissue.

The recommended working concentration for immunofluorescence and immunoblotting is 0.25–0.5 µg/ml. BT474, human K562, HL-60, Hep-2, HeLa or Cos-1 cells may be used as positive controls.

Note: In order to obtain best results using different techniques and preparations we recommend determining optimal working concentration by titration.

References

1. Walker, J. R., et al., Structure of the Ku heterodimer bound to DNA and its implications for double-strand break repair. Nature, **412**, 607-614 (2001).
2. Reeves, W. H., Antibodies to the p70/p80 (Ku) antigens in systemic lupus erythematosus. Rheum. Dis. Clin. North Am., **18**, 391-414 (1992).
3. McConnell, K. K. and Dynan, W. S., The DNA-dependent protein kinase: a matter of life and (cell) death. Curr. Opinion Cell Biol., **8,** 325-330 (1996)
4. Goedecke, W., et al., Mre11 and Ku70 interact in somatic cells, but are differentially expressed in early meiosis. Nature Genet., **23**, 194-198 (1999).

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