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BTK Antibody

Catalog # ASC10269

Product Information

Application	WB, IF, ICC, E
Primary Accession	Q06187
Other Accession	Q06187, 547759
Reactivity	Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Isotype	IgG
Calculated MW	76281
Concentration (mg/ml)	1 mg/mL
Conjugate	Unconjugated
Application Notes	BTK antibody can be used for the detection of BTK by Western blot at 0.5 to 2 g/mL. Antibody can also be used for immunocytochemistry starting at 10 g/mL. For immunofluorescence start at 10 g/mL.

Additional Information

Gene ID	695
Other Names	BTK Antibody: AT, ATK, BPK, XLA, IMD1, AGMX1, PSCTK1, Tyrosine-protein kinase BTK, Agammaglobulinemia tyrosine kinase, Bruton agammaglobulinemia tyrosine kinase
Target/Specificity	BTK; Multiple isoforms of BTK are known to exist.
Reconstitution & Storage	BTK antibody can be stored at 4℃ for three months and -20℃, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures.
Precautions	BTK Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

Protein Information

Name	BTK
Synonyms	AGMX1, ATK, BPK
Function	Non-receptor tyrosine kinase indispensable for B lymphocyte development, differentiation and signaling (PubMed:19290921). Binding of antigen to the B-cell antigen receptor (BCR) triggers signaling that ultimately leads to B-cell activation (PubMed:19290921). After BCR engagement and activation at the plasma membrane, phosphorylates PLCG2 at several sites, igniting the downstream signaling pathway through calcium mobilization, followed by

activation of the protein kinase C (PKC) family members (PubMed:11606584). PLCG2 phosphorylation is performed in close cooperation with the adapter protein B-cell linker protein BLNK (PubMed:11606584). BTK acts as a platform to bring together a diverse array of signaling proteins and is implicated in cytokine receptor signaling pathways (PubMed:16517732, PubMed:17932028). Plays an important role in the function of immune cells of innate as well as adaptive immunity, as a component of the Toll-like receptors (TLR) pathway (PubMed:16517732). The TLR pathway acts as a primary surveillance system for the detection of pathogens and are crucial to the activation of host defense (PubMed:16517732). Especially, is a critical molecule in regulating TLR9 activation in splenic B-cells (PubMed:16517732, PubMed:17932028). Within the TLR pathway, induces tyrosine phosphorylation of TIRAP which leads to TIRAP degradation (PubMed:16415872). BTK also plays a critical role in transcription regulation (PubMed:19290921). Induces the activity of NF-kappa-B, which is involved in regulating the expression of hundreds of genes (PubMed:19290921). BTK is involved on the signaling pathway linking TLR8 and TLR9 to NF-kappa-B (PubMed:19290921). Acts as an activator of NLRP3 inflammasome assembly by mediating phosphorylation of NLRP3 (PubMed:34554188). Transiently phosphorylates transcription factor GTF2I on tyrosine residues in response to BCR (PubMed:9012831). GTF2I then translocates to the nucleus to bind regulatory enhancer elements to modulate gene expression (PubMed:9012831). ARID3A and NFAT are other transcriptional target of BTK (PubMed:16738337). BTK is required for the formation of functional ARID3A DNA-binding complexes (PubMed:16738337). There is however no evidence that BTK itself binds directly to DNA (PubMed:16738337). BTK has a dual role in the regulation of apoptosis (PubMed:9751072). Plays a role in STING1- mediated induction of type I interferon (IFN) response by phosphorylating DDX41 (PubMed:25704810).

Cellular Location

Cytoplasm. Cell membrane; Peripheral membrane protein. Nucleus Membrane raft {ECO:0000250|UniProtKB:P35991}. Note=In steady state, BTK is predominantly cytosolic. Following B-cell receptor (BCR) engagement by antigen, translocates to the plasma membrane through its PH domain Plasma membrane localization is a critical step in the activation of BTK. A fraction of BTK also shuttles between the nucleus and the cytoplasm, and nuclear export is mediated by the nuclear export receptor CRM1.

Tissue Location

Predominantly expressed in B-lymphocytes.

Background

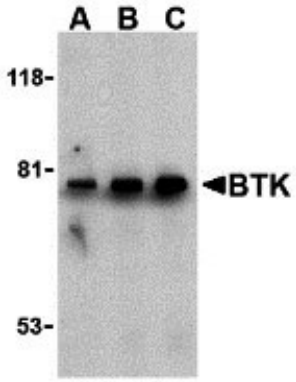
BTK Antibody: Bruton's tyrosine kinase (BTK) was initially identified as a member of the src family for protein-tyrosine kinases that was involved in X-linked agamma-globulinaemia, and has since been shown to involved in a number of signaling pathways in hemapoietic lineage. It has recently been shown to interact with members of the toll-like receptor (TLR) family such as TLR4, 6, 8, and 9. The TLRs are critical molecules in both the innate and adaptive immunity and can recognize diverse microbial pathogens. BTK has also been shown to interact with key proteins involved in TLR4 signal transduction such as MyD88, TIRAP, and IRAK, but not TRAF-6, suggesting that BTK is involved in lipopolysaccharide signal transduction.

References

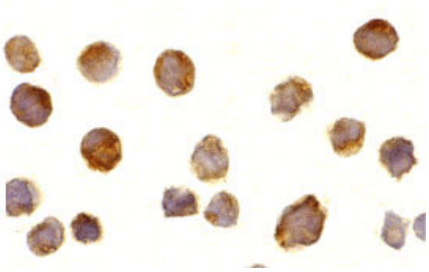
Vetrie D, Vorechovsky I, Sideras P, et al. The gene involved in X-linked ayglobulinaemia is a member of the src family of tyrosine kinases. Nature 1993; 361:226-33.
Kawakami Y, Kitaura J, Hata D, et al. Functions of Bruton's tyrosine kinase in mast and B cells. J. Leukoc. Biol. 1999; 65(3):286-90.
Jefferies CA, Doyla S, Brunner C, et al. Bruton’s tyrosine kinase is a Toll/Interleukin-1 receptor domain-binding protein that participates in nuclear factor kB activation by Toll-like receptor 4. J. Biol. Chem. 2003; 278:26258-26264.

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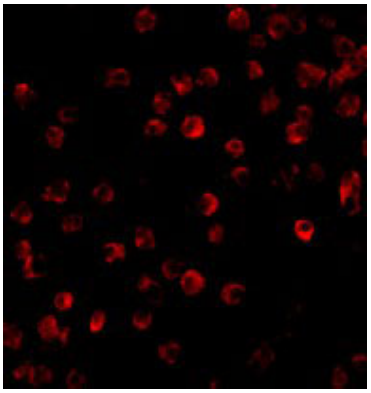
Images



Western blot analysis of BTK in U937 cell lysate with BTK antibody at (A) 0.5, (B) 1, and (C) 2 µg/mL.



Immunocytochemistry of BTK in Daudi cells with BTK antibody at 10 µg/mL.



Immunofluorescence of BTK in Daudi cells with BTK antibody at 10 µg/mL.

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