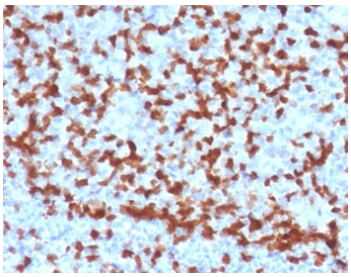
ZAP70 Antibody / T-cell Activation Threshold Antibody [clone ZPT70-2] (V3898)

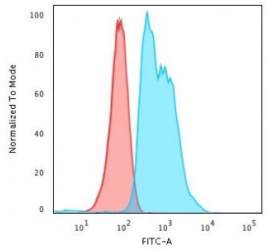
Catalog No.	Formulation	Size
V3898-100UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	100 ug
V3898-20UG	0.2 mg/ml in 1X PBS with 0.1 mg/ml BSA (US sourced) and 0.05% sodium azide	20 ug
V3898SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

Availability	1-3 business days
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1, kappa
Clone Name	ZPT70-2
Purity	Protein G affinity chromatography
UniProt	P43403
Localization	Cytoplasmic, cell surface
Applications	Flow Cytometry : 1-2ug/10^6 cells Immunohistochemistry (FFPE) : 1-2ug/ml for 30 min at RT
Limitations	This ZAP70 antibody is available for research use only.



ZAP70 Antibody / T-cell Activation Threshold Antibody. Immunohistochemistry analysis of formalin-fixed, paraffin-embedded human tonsil tissue using ZAP70 Antibody / T-cell Activation Threshold Antibody (clone ZPT70-2). Antigen retrieval was performed by boiling sections in pH 9 Tris-EDTA buffer for 10-20 minutes followed by cooling at room temperature. Cytoplasmic HRP-DAB brown staining is observed in dense lymphoid cell populations within tonsillar follicles and interfollicular regions, with variable staining intensity across adjacent cells. This heterogeneous pattern is consistent with Zeta-chain-associated protein kinase 70 (ZAP70) expression reflecting differences in signaling sensitivity and activation thresholds among lymphocytes. The staining highlights subsets of cells with varying activation potential, supporting the role of ZAP70 in regulating signal strength discrimination within lymphoid tissue architecture.



ZAP70 Antibody / T-cell Activation Threshold Antibody. Flow cytometry analysis of PFA-fixed human Jurkat T lymphocyte cells using ZAP70 Antibody / T-cell Activation Threshold Antibody (clone ZPT70-2). Cells were fixed and permeabilized to enable intracellular detection of Zeta-chain-associated protein kinase 70 (ZAP70), a key regulator of signaling sensitivity and activation thresholds in T cells. The blue histogram shows a clear rightward fluorescence shift compared to the red isotype control, indicating specific intracellular ZAP70 staining. The distribution and breadth of the signal are consistent with heterogeneous ZAP70 expression levels that reflect differences in signaling strength and activation potential within the cell population, supporting its role in T-cell activation threshold regulation.

Description

Zeta-chain-associated protein kinase 70 (ZAP70) is a cytoplasmic tyrosine kinase that plays a critical role in determining T-cell activation thresholds by regulating signaling sensitivity to antigen stimulation. ZAP70 Antibody is uniquely positioned for studying T-cell activation threshold signaling, where small differences in receptor engagement are translated into distinct cellular responses. ZAP70 antibody, also known as Zeta-chain-associated protein kinase 70 antibody or ZAP-70 antibody, is widely used to investigate how T cells discriminate between weak and strong activation signals.

T-cell activation depends on the strength of signals transmitted through the T-cell receptor, which varies based on antigen affinity, receptor density, and co-stimulatory signals. ZAP70 functions as a key regulator of this process by controlling early signal propagation, thereby setting the threshold required for activation. Subtle changes in ZAP70 activity can shift the balance between activation and non-responsiveness, making it a central determinant of signaling sensitivity.

This ZAP70 Antibody is uniquely positioned for studying activation threshold dynamics, with emphasis on signal strength discrimination and sensitivity tuning rather than suppression or amplification. Its use supports investigation of how T cells respond differently to varying levels of stimulation and how signaling thresholds are established, adjusted, and maintained. This differentiator clearly separates it from tolerance-focused pages, which emphasize immune suppression, and from amplification-focused pages, which emphasize downstream signal expansion.

ZAP70-mediated control of activation thresholds is essential for ensuring appropriate immune responses, allowing T cells to respond to foreign antigens while avoiding activation by weak or self-derived signals. This balance is critical for effective immunity and prevention of inappropriate activation.

In experimental systems, activation thresholds can be studied by varying antigen concentration or receptor engagement conditions, with ZAP70 serving as a key indicator of signaling output. Detection of ZAP70 enables researchers to quantify how signaling strength influences cellular responses and to examine mechanisms that modulate T-cell sensitivity.

Overall, ZAP70 Antibody provides a focused tool for studying T-cell activation threshold signaling, enabling detailed investigation of signaling sensitivity, response tuning, and the molecular mechanisms that determine whether immune

cells become activated in response to antigen stimulation.

Application Notes

The stated application concentrations are suggested starting points. Titration of the ZAP70 Antibody / T-cell Activation Threshold Antibody may be required due to differences in protocols and secondary/substrate sensitivity.

Immunogen

A portion of amino acids 247-382 from the human protein was used as the immunogen for the ZAP70 Antibody / T-cell Activation Threshold Antibody.

Storage

Store the ZAP70 antibody at 2-8oC (with azide) or aliquot and store at -20oC or colder (without azide).

Alternate Names

ZAP70 antibody, Zeta-chain-associated protein kinase 70 antibody, ZAP70 activation threshold antibody, ZAP70 signaling sensitivity antibody, ZAP70 antigen response antibody