

Product Information

Anti-phospho-Lck (pTyr¹⁹²)

Developed in Rabbit, Affinity Isolated Antibody

Product Number **L 4417**

Product Description

Anti-phospho-Lck (pTyr¹⁹²) is developed in rabbit using a synthetic phosphorylated peptide derived from the region of Lck that is phosphorylated on tyrosine 192 as immunogen. The antibody is preadsorbed to remove any reactivity towards a non-phosphorylated Lck.

The antibody specifically recognizes human Lck (pTyr¹⁹²). Mouse (100% homologous) and chicken (79% homologous) have not been tested. It has been used in immunoblotting applications.

Lck protein, also known as T cell-specific protein-tyrosine kinase, p56^{Lck} or p56Lck, a member of the Src family of non-receptor tyrosine protein kinases, is a 56 kDa protein expressed predominantly in T cells. The T cell antigen receptor (TCR) plays a crucial role in thymocyte differentiation and T cell activation. After antigen binding to the TCR, other co-receptors and associated ligands (such as CD4, major histocompatibility complex class II, CD28, B7, CD8, and MHC I) are engaged and the signal transduction cascades are activated. At least three protein-tyrosine kinases are known to be involved in TCR signaling at the level of the receptor, including p59Fyn, p56Lck, and ZAP70.^{1,2} Studies using an Lck-deficient T cell line confirmed the role of Lck in TCR stimulated STAT5 activation.³

The activity of Lck is known to be regulated by phosphorylation of two conserved tyrosine residues, tyrosine 505 (equivalent to Tyr-529 in c-Src) and tyrosine 394 (equivalent to Tyr-418 in c-Src). The SH2 domain of the Src family kinase Lck is phosphorylated at tyrosine 192 in T cells upon T cell antigen receptor triggering. Phosphorylation at tyrosine 192 reduces the capacity of the isolated SH2 domain to bind a high affinity peptide ligand. In intact T cells, where Lck participates in T cell antigen receptor signal transduction in an SH2 domain-dependent manner, phosphorylation of tyrosine 192 correlates with reduced downstream signaling. Tyrosine phosphorylation of the SH2 domain of Lck terminates its high affinity binding to

ligands, thereby negatively regulating its participation in T cell antigen receptor signaling. This represents a novel mechanism for the regulation of the function of SH2 domains.⁴

Reagent

The antibody is supplied as a solution in Dulbecco's phosphate buffered saline (without Mg²⁺ and Ca²⁺), pH 7.3 (+/- 0.1), 50% glycerol, with 1.0 mg/mL BSA (IgG, protease free) and 0.05% sodium azide

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. Due to the presence of 50% glycerol the antibody will remain in solution. For extended storage, centrifuge the vial briefly before opening and prepare working aliquots. To ensure accurate dilutions mix gently, remove excess solution from pipette tip with clean absorbent paper, pipette slowly. The antibody is stable for at least six months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

Product Profile

A recommended working dilution of 1:1000 is determined by immunoblotting using a full length recombinant human Lck protein.

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

References

1. Saint-Ruf, C. et al., Different initiation of pre-TCR and γ - δ -TCR signaling. *Nature*, **406**, 524-527 (2000).

2. Fujimaki, W., et al., Functional uncoupling of TCR engagement and Lck activation in anergic human thymic CD4⁺ T cells. J. Biol. Chem., **276**, 17455-17460 (2001).
3. Welte, T., et al., STAT5 interaction with the T cell receptor complex and stimulation of T cell proliferation. Science, **283**, 222-225 (1999).
4. Couture, C., et al. Regulation of the Lck SH2 domain by tyrosine phosphorylation. J. Biol. Chem., **271**, 24880-24884 (1996).

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