Anti-phospho-FAK (pSer^{722})
produced in rabbit, affinity isolated antibody

Catalog Number F9051

Product Description

Anti-FAK (Focal Adhesion Kinase) (pSer^{722}) was produced in rabbit using a synthetic phosphopeptide derived from the region of FAK that contains Ser^{722} as immunogen. The serum is affinity purified using epitope-specific affinity chromatography. The antibody is preadsorbed to remove any reactivity towards FAK enzyme phosphorylated on serine irrespective of the sequence. Anti-phospho-FAK (pSer^{722}) specifically recognizes FAK phosphorylated at Ser^{722} (125 kDa).

The antibody detects human, mouse, rat, chicken and frog FAK (pSer^{722}). It has been used in immunoblotting applications.\(^1\)\(^2\)

Integrins, adhesion receptors for extracellular matrix proteins, are involved in cell proliferation, apoptosis, migration and spreading. Integrin signaling is activated during epithelial-mesenchymal transdifferentiation (EMT) and cell migration processes serving as models for carcinogenesis. Focal Adhesion Kinase (FAK) is a cytoplasmic protein tyrosine kinase involved in several integrin-mediated signaling pathways. These signaling cascades are initiated when an integrin interacts with components of the extracellular matrix triggering phosphorylation of FAK at multiple sites. Specifically FAK regulates cell differentiation, adhesion, migration and acceleration of the G1 to S phase transition of the cell cycle.

FAK autophosphorylation is critical for maximum adhesion and migration responses. Integrin-induced autophosphorylation of FAK at Tyr^{397} (the major autophosphorylation site) creates a binding site on FAK for Src-family kinases. Src then binds to and phosphorylates Tyr^{625}, localized in the paxillin binding domain. This creates a Grb2 SH2-domain binding site and provides a link to the activation of the Ras signal transduction pathway. Tyr^{576} and Tyr^{577}, located in the activation loop of the kinase domain of FAK, are also phosphorylated by Src. FAK catalytic activity may be increased by phosphorylation of these residues. While phosphorylation of FAK at Tyr^{397} occurs even in sedentary cells and is localized exclusively at cytoplasm, the phosphorylation of Tyr^{607} and Tyr^{861} is induced during EMT and further augmented during cell migration.

In addition to the multiple tyrosine phosphorylation events involved in integrin signaling, FAK becomes heavily phosphorylated on serine residues when cells enter mitosis. At this time, tyrosine sites become dephosphorylated and inactivated. The mitosis-specific serine phosphorylation causes FAK modification and uncouples signal transduction pathways involving integrin, CAS and c-Src. FAK remains in an inactive state until post-mitosis, and the cells are able to detach from the extracellular matrix until cell division is complete. Studies of four major sites of serine phosphorylation (at amino acids 722, 840, 843 and 910), using phosphorylation-specific antibodies, have shown that Ser^{722} is constitutively phosphorylated during the cell cycle and plays role as a regulator of FAK-CAS interaction. In contrast, Ser^{843} and Ser^{910} are mitosis-specific and exhibit increased phosphorylation during mitosis.\(^1\)\(^-\)\(^6\)

Reagents
Supplied as a solution in Dulbecco’s phosphate buffered saline (without Mg\(^{2+}\) and Ca\(^{2+}\)), pH 7.3, with 1.0 mg/ml BSA (IgG and protease free), 50% glycerol and 0.05% sodium azide.

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Storage/Stability
Store at −70 °C. For extended storage, upon initial thawing, freeze in working aliquots. Avoid repeated freezing and thawing to prevent denaturing the antibody. Working dilution samples should be discarded if not used within 12 hours. The antibody is stable for at least 6 months when stored appropriately.
Product Profile

The amount of antibody supplied is sufficient for 10 immunoblots.

Immunoblotting: a recommended working concentration of 0.1-1.0 µg/ml is determined using cell extracts from mitotic human epithelial carcinoma cells expressing FAK. Data demonstrates that only the phosphopeptide corresponding to the region containing Ser\(^{722}\) blocks the antibody signal, which confirms the specificity of the Anti-phospho-FAK [pSer\(^{722}\)] for this phosphorylated residue.

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

References