BACKGROUND

Two signaling molecules have been implicated in the modulation of immune receptor activation by inhibitory coreceptors: an inositol polyphosphate 5'-phosphatase, SHIP, and a tyrosine phosphatase, SHP-1. Several features have emerged that are common to these inhibitory receptors. A consensus inhibitory motif (ITIM) first identified in Fc-gamma-RIIB, I/LxYxxL, has been recognized in the cytoplasmic domains of this growing family of inhibitory molecules. Inhibitory activity is only seen upon coligation to an ITAM-containing receptor, a class that includes BCR, TCR, and FcRs for IgG and IgE. Phosphorylation of the tyrosine in the ITIM by an ITAM-associated tyrosine kinase is critical to its inhibitory mechanism. In the case of Fc-gamma-RIIB, coligation to the BCR or mast cell Fc-epsilon-RI or Fc-gamma-RIII results primarily in the recruitment of SHIP-1, although *in vitro* SHP-1 and -2 have also been reported to be associated with this receptor. Similarly, phosphorylation of the ITIM in KIR, CD22, and gp49B1 results in the recruitment of SHP-1, while SHP-2 has been found to be associated with CTLA4.[1] Additionally, it was shown that the inhibitory effect of SHP-1 on c-Kit is realized through SHP-1 binding with tyrosine 569 in the c-Kit juxtamembrane domain.[2] However, despite these similarities in sequence requirements and potential signaling pathways, the inhibitory responses generated by these receptors are not identical. Indeed, the recruitment of either an inositol polyphosphate 5'-phosphatase (SHIP) or a tyrosine phosphatase is likely to trigger distinct cellular pathways, culminating in inhibitory responses that are phenotypically quite different.

The Src homology 2 domain phosphatase-1 (SHP-1, also called PTP1C, HCP, or SHPTP1) is a tyrosine phosphatase containing two amino-terminal SH2 domains and is expressed primarily by hematopoietic-derived cells . The pivotal role of SHP-1 in the regulation of hemopoietic cell growth and development is now well recognized. In contrast to the structurally similar, ubiquitously expressed SHP-2 (Syp or PTP1D) tyrosine phosphatase, SHP-1 appears to exert primarily inhibitory effects on the signaling cascades in which it participates. SHP-1 has been shown, for example, to suppress the growth-promoting properties of the activated IL-3, Epo, and CSF1 receptors, an effect mediated either directly by receptor dephosphorylation or indirectly by dephosphorylation of receptor-associated protein tyrosine kinases (PTKs). SHP-1 has also been implicated in downregulation of the signaling pathways evoked by engagement of the B- and T-lymphocyte antigen receptors, antigen receptor comodulators such as CD22, FcγRIIB, and CD5, and cytosolic signaling molecules such as Vav and Grb2/Sos1 which are involved in Ras activation.[3] The presence of two SH2 domains in SHP-1, as well as the possibility for altering its C-terminal SH2 domain by alternative splicing of a 39-amino-acid segment, provides a structural explanation for the diverse range of molecular interactions in which this phosphotyrosine phosphatase (PTP) appears to participate.[4] In addition to the regulation of cell proliferation, SHP-1 has also been implicated in the control of signaling cascades coupling growth factor receptors to hemopoietic cell differentiation.

References:
1. Ono, M. et al: Cell 90:293-301, 1997
2. Kozlowski, M. et al: Mol. Cell. Biol. 18:2089-99, 1998
3. Zhang, J. et al: Semin. Immunol. 12:361-78, 2000
4. Poole, A.W. & Jones, M.: Cell Signal. 17:1323-32, 2005

TECHNICAL INFORMATION

Source:
SHP-1 Antibody is a rabbit antibody raised against a short peptide from C-terminal sequence of human SHP-1.

Specificity and Sensitivity:
This antibody detects endogenous SHP-1 proteins without cross-reactivity with other family members.

Storage Buffer: PBS with up to 0.1% sodium azide, 0.05% BSA, and 50% glycerol.

Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000-1:10000
IP	n/d
IHC	1:1000-1:2000
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

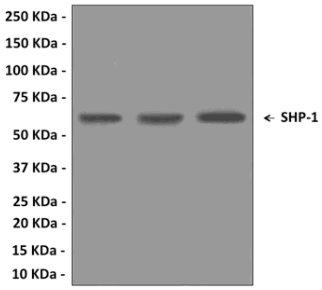
CELL APPLICATIONS, INC.

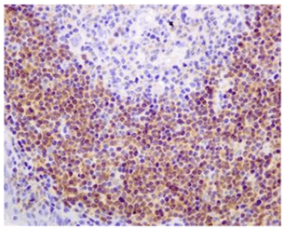
SHP-1 Antibody

Cat. No. CG1545

Applications:	**WB, IHC**
Detected MW:	**68 kDa**
Species & Reactivity:	**Human**
Isotype:	**Rabbit IgG**

QUALITY CONTROL DATA





Top: Jurkat (Left Lane), Raji (Middle Lane), and human lymph node (Right Lane) lysates were probed with Anti-SHP-1, clone EPR5519, Rabbit Monoclonal (1:1,000-10,000 dilution). Proteins were visualized using a Goat Anti-Rabbit secondary antibody conjugated to HRP and a chemiluminescence detection system.
Bottom: Formalin Fixed Paraffin Embedded (FFPE) human tonsil tissue was prepared using heat-induced epitope retrieval (HIER). Immunostaining was performed using a 1:1,000-2,000 dilution of, Anti-SHP-1, clone EPR5519, Rabbit Monoclonal. Reactivity was detected using a Anti-Rabbit secondary antibody and HRP-DAB.