

BACKGROUND

The integrins are a family of alpha/beta heterodimeric receptors that mediate dynamic linkages between extracellular adhesion molecules and the intracellular actin cytoskeleton. Integrins are expressed by all multicellular animals, but their diversity varies widely among species; for example, in mammals, 19 alpha and 8 beta subunit genes encode polypeptides that combine to form 25 different receptors. Both integrin subunits are type I transmembrane proteins with large extracellular and short cytoplasmic domains of 700-1100 and 30-50 residues respectively. Integrins are ubiquitously expressed and at physiological conditions, integrins are highly glycosylated and contain a Ca^{2+} or Mg^{2+} ion, which is essential for ligand binding. Integrin receptors are critical for cell attachment to the extracellular matrix (ECM) and this is mediated through integrin-fibronectin, -vitronectin, -collagen and - laminin interactions. Intracellularly, integrins form adhesion complexes with proteins including talin, vinculin, paxillin and alpha-actinin. They also regulate kinases, such as focal adhesion kinase and Src family kinases, to mediate attachment to the actin cytoskeleton. Integrins also have a significant role in cell signaling and can activate protein kinases involved in the regulation of cell growth, division, survival, differentiation, migration and apoptosis. The beta 1, beta 3, and beta 5 integrin intracellular domains are sufficient to initiate signal transduction pathways. Furthermore, alternative splicing can regulate the ability of beta integrin intracellular domains to participate in signal transduction. Glycoprotein II/IIIb (alphaIIb/beta3) is an integrin receptor found on the surface of platelets. It is involved in the cross-linking of platelets with fibrin, and so has a vital role in blood clot formation.¹

Integrin alpha 5 chain undergoes post-translational cleavage in the extracellular domain to yield disulfide-linked light and heavy chains that join with beta 1 to form a fibronectin receptor. It recognizes the sequence R-G-D in its ligands. Alpha5/beta1 is involved in many cellular processes including cell proliferation and oncogenic transformation, assembly of FN-rich extracellular matrices, cell migration, regulation of gene expression, wound healing, and T cell activation.² For example, loss of alpha5/beta1 integrin expression and increased alpha3/beta1 integrin expression were associated with the transformed phenotype of fibroblasts. Overexpression of alpha5/beta1 integrin leads to a loss of anchorage-independent growth and reduced tumorigenicity in transformed Chinese hamster ovary cells.³ It has also been suggested that alpha5b1 may play important roles during embryogenesis and differentiation. In addition to adhesion, integrins are known to participate in cell-surface mediated signaling.

References:

1. Schwartz, M.A. & Ginsberg, M.H.: et al: Nature Cell Biol. 4:E65-E68, 2002
2. Yang, J.T. et al: Development 119:1093-1105, 1993
3. Gong, J. et al: Cell Growth Different. 8:83-90, 1993

TECHNICAL INFORMATION

Source:

Integrin alpha-5 Antibody is a mouse monoclonal antibody raised against purified recombinant human integrin alpha-5 fragments expressed in *E. coli*.

Specificity and Sensitivity:

This antibody detects endogenous integrin alpha-5 proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

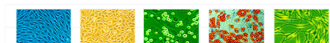
Storage:

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

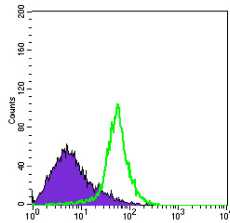
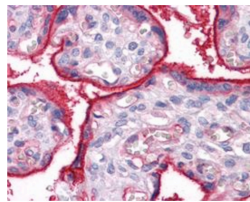
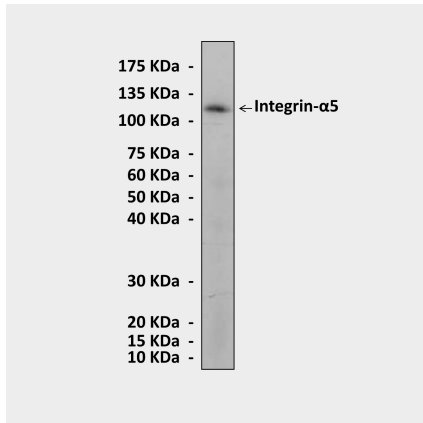
APPLICATIONS

Application:	*Dilution:
WB	1:1,000
IP	n/d
IHC	n/d
ICC	n/d
FACS	1:200

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



QUALITY CONTROL DATA



Top: Western Blot detection of integrin alpha-5 proteins in human spleen tissue lysate using Integrin alpha-5 Antibody. **Middle:** Immunohistochemical analysis of paraffin-embedded human placenta tissue using integrin alpha-5 Antibody. **Bottom:** This antibody also specifically reacts with integrin alpha-5 proteins in HeLa cells in FACS analysis (Integrin alpha-5 antibody: Green; normal mouse IgG control: Blue).

