

**DESCRIPTION**

<b>Source</b>	Chinese Hamster Ovary cell line, CHO-derived		
	Human Integrin $\alpha 2$ (Tyr30 - Thr1132) Accession # NP_002194	HPGGGSGGGS	Human c-Jun (Arg276 - His315)
	Human Integrin $\beta 1$ (Gln21 - Asp728) Accession # P05556	GGGSGGGS	Human c-Fos (Leu161 - Ala199)
	N-terminus		C-terminus

**N-terminal Sequence Analysis** Tyr30 ( $\alpha 2$ ) & No results obtained, Gln21 predicted ( $\beta 1$ )

**Predicted Molecular Mass** 126 kDa ( $\alpha 2$ ) & 83.3 kDa ( $\beta 1$ )

**SPECIFICATIONS**

<b>SDS-PAGE</b>	140-150 kDa ( $\alpha 2$ ) & 120-130 kDa ( $\beta 1$ ), reducing conditions
<b>Activity</b>	Measured by its binding ability in a functional ELISA. When bovine collagen-II is coated at 10 $\mu\text{g}/\text{mL}$ , rhIntegrin $\alpha 2\beta 1$ binds with an apparent $K_D < 1\text{nM}$ .
<b>Endotoxin Level</b>	<1.0 EU per 1 $\mu\text{g}$ of the protein by the LAL method.
<b>Purity</b>	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
<b>Formulation</b>	Lyophilized from a 0.2 $\mu\text{m}$ filtered solution in PBS. See Certificate of Analysis for details.

**PREPARATION AND STORAGE**

<b>Reconstitution</b>	Reconstitute at 200 $\mu\text{g}/\text{mL}$ in PBS.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
<b>Stability &amp; Storage</b>	<p><b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b></p> <ul style="list-style-type: none"> <li>● 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>● 3 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

**BACKGROUND**

Integrin  $\alpha 2\beta 1$  is one of twelve integrin family adhesion receptors that share the  $\beta 1$  subunit (1 - 3). It is the non-covalent heterodimer of 160 kDa  $\alpha 2$  (CD49b) and 130 kDa  $\beta 1$  (CD29) type I transmembrane glycoprotein subunits and is one of six very late antigens on activated T cells, designated VLA2 (3). The  $\alpha 2$  extracellular domain (ECD) contains an I (inserted) domain which includes the ligand binding site (2, 3). The  $\beta 1$  ECD contains a vWFA domain, which participates in binding. Each subunit then has a transmembrane sequence and a short cytoplasmic tail. The dimer is folded when it is least active. Divalent cations and intracellular (inside-out) signaling convert it to its most active, extended and open conformation (1, 2). The 1102 amino acid (aa) human  $\alpha 2$  extracellular domain (ECD) shares 83 - 89% aa sequence identity with mouse, rat, canine, bovine and equine  $\alpha 9$ , while the 708 aa human  $\beta 1$  ECD shares 92 - 96% aa sequence identity with rat, bovine, mouse, and feline  $\beta 1$ . The I domain-containing  $\beta 1$  integrins ( $\alpha 1\beta 1$ ,  $\alpha 2\beta 1$ ,  $\alpha 10\beta 1$  and  $\alpha 11\beta 1$ ) all bind collagens, with  $\alpha 2\beta 1$  preferring collagens I - III (4, 5). Platelet  $\alpha 2\beta 1$ , also called GPIa, cooperates with another adhesion protein, GPVI, to coordinate platelet collagen binding and activation (3, 6, 7). Other  $\alpha 2\beta 1$  ligands include laminin, decorin, E-cadherin, and collagen-like regions of collectin molecules such as C1q (4). Adhesion is synergized by crosstalk with syndecan-1 or HGF R/c-Met, and antagonized by crosstalk with Integrin  $\alpha 1\beta 1$  (8 - 10). In addition to expression on selected hematopoietic cells,  $\alpha 2\beta 1$  is present on a wide variety of non-hematopoietic cells (4). Mice deficient in the  $\alpha 2$  subunit have defects in innate immune responses, wound mast cell infiltration and angiogenesis, and platelet responses to collagen (6, 11, 12). In innate immunity,  $\alpha 2\beta 1$  binding to C1q initiates the complement cascade and costimulates mast cell activation, triggering neutrophil influx (4, 12).

**References:**

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