Recombinant Mouse Integrin α1β1

Catalog Number: 8188-AB

DESCRIPTION

Source Chinese Hamster Ovary cell line, CHO-derived

N-terminal Sequence Analysis	Phe29 (Integrin α1) & No results obtained: Gln21 predicted (Integrin β1), sequencing might be blocked
Structure / Form	Noncovalently-linked heterodimer
Predicted Molecular Mass	132 kDa (Integrin α1) & 86.5 kDa (Integrin β1)

SPECIFICATIONS

SDS-PAGE	120-135 kDa & 180-215 kDa, reducing conditions
Activity	Measured by its binding ability in a functional ELISA. When Collagen I is immobilized at 5 µg/mL, Recombinant Mouse Integrin α1β1 can bind with an apparent K_d <5 nM. **Optimal dilutions should be determined by each laboratory for each application.**
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE with silver staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 500 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

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BACKGROUND

Integrin α1β1, also called VLA1, is the only α1 integrin family adhesion receptor, one of twelve integrins that share the β1 subunit, and one of four collagen-binding integrins (1-6). It is the non-covalent heterodimer of 190-210 kDa α1 (CD49a) and 130 kDa β1 (CD29) type I transmembrane glycoprotein subunits. It is found on cells including activated T cells, B cells, monocytes, vascular smooth muscle cells, osteoblasts and adipocytes (2, 7-9). The α1 extracellular domain (ECD) contains an I (inserted) domain which includes the ligand binding site (2, 4). The β1 ECD contains a vWFA domain, which participates in binding (3). Each subunit then has a transmembrane sequence and a short cytoplasmic tail. Divalent cations and intracellular (inside-out) signaling convert the dimer from the folded, inactive form to its most active, extended conformation (1, 2). The 1113 amino acid (aa) mouse α1 extracellular domain (ECD) shares 88% and 96% aa sequence identity with human and rat α1, respectively, while the 708 aa mouse β1 ECD shares 93% and 98% aa sequence identity with human and rat β1, respectively. α1β1 preferentially binds collagens I, IV, VI, XIII and XVI, but also binds laminin (4-11). α1β1 is reported to down-regulate EGF R signaling, increase expression of caveolin-1, reduce production of reactive oxygen species, regulate collagen expression, control MMP collagenase and gelatinase activity, and mediate the renal basement membrane disorder Alport syndrome (11-13). These effects may begin by α1β1 binding of caveolin-1, initiating signaling pathways that involve the phosphatase TC-PTP, kinases ERK and p38, and the transcription factor PPAR-γ (11-14). α1β1 down-regulates MMP-mediated angiostatin formation, enhancing tumor vascularization (9). α1β1-null mice are deficient in fibroblast collagen IV and laminin-mediated cell spreading and migration, show defects in bone healing, and are resistant to Alport renal fibrosis (10-12, 15). When expressed in the same epithelial cells, α1β1 negatively regulates integrin α2β1-mediated cell adhesion and migration (16).

References:

1. Takada, Y. *et al.* (2007) Genome Biol. **8**:215.
2. Luo, B-H. *et al.* (2007) Annu. Rev. Immunol. **25**:619.
3. Argraves, W.S. *et al.* (1987) J. Cell Biol. **105**:1183.
4. Briesewitz, R. *et al.* (1993) J. Biol. Chem. **268**:2989.
5. Holers, V.M. *et al.* (1989) J. Exp. Med. **169**:1589.
6. Tulla, M. *et al.* (2001) J. Biol. Chem. **276**:48206.
7. Eble, J.A. *et al.* (2006) J. Biol. Chem. **281**:25745.
8. Hall, D.E. *et al.* (1990) J. Cell Biol. **110**:2175.
9. Pozzi, A. *et al.* (2000) Proc. Natl. Acad. Sci. USA **97**:2202.
10. Gardner, H. *et al.* (1999) J. Cell Sci. **112**:263.
11. Dennis, J. *et al.* (2010) Am. J. Pathol. **177**:2527.
12. Cosgrove, D. *et al.* (2008) Am. J. Pathol. **172**:761.
13. Chen, X. *et al.* (2010) Mol. Cell. Biol. **30**:3048.
14. Borza, C.M. *et al.* (2010) J. Biol. Chem. **285**:40114.
15. Gardner, H. *et al.* (1996) Dev. Biol. **175**:301.
16. Abair, T.D. *et al.* (2008) Exp. Cell Res. **314**:3593.

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