# Recombinant Human Integrin alpha V beta 3 Fc Chimera

Catalog Number: 11648-AV

## DESCRIPTION

**Source**

Human embryonic kidney cell, HEK293-derived human Integrin alpha V beta 3 protein

| | | |
|---|---|---|
| Human ITGAV (Phe31-Val992) Accession # AAA36808.1 | IEGR | Human $IgG_1$ (Glu99-Lys330) (with modifications) |
| Human ITGB3 (Gly27-Asp718) Accession # P05106.2 | HPIEGR | Human $IgG_1$ (Glu99-Lys330) (with modifications) |

N-terminus C-terminus

| | |
|---|---|
| **N-terminal Sequence Analysis** | Phe 31 (Integrin alpha V) & Gly 27 (Integrin Beta 3) |
| **Structure / Form** | Disulfide linked heterodimer |
| **Predicted Molecular Mass** | 133 kDa (Integrin alpha V) & 103 kDa (Integrin beta 3) |

## SPECIFICATIONS

| | |
|---|---|
| **SDS-PAGE** | >190 kDa, under non-reducing conditions. |
| **Activity** | Measured by its binding ability in a functional ELISA.<br>Recombinant Human Integrin alpha V beta 3 Fc Chimera (Catalog # 11648-AV) binds to Recombinant Human Vitronectin (Catalog # 2308-VN) with an $ED_{50}$ of 60.0-600 ng/mL. |
| **Endotoxin Level** | <0.10 EU per 1 µg of the protein by the LAL method. |
| **Purity** | >95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining. |
| **Formulation** | Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. |

## PREPARATION AND STORAGE

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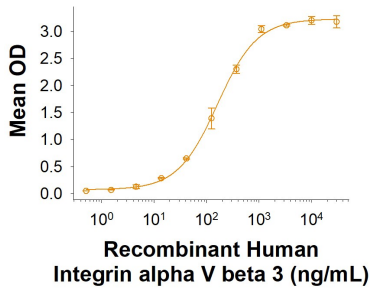
|---|---|
| **Reconstitution** | Reconstitute at 250 µg/mL in water. |
| **Shipping** | The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. |
| **Stability & Storage** | **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**<br>• 12 months from date of receipt, -20 to -70 °C as supplied.<br>• 1 month, 2 to 8 °C under sterile conditions after reconstitution.<br>• 3 months, -20 to -70 °C under sterile conditions after reconstitution. |

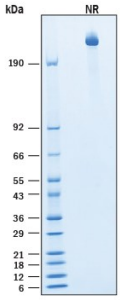
## DATA

**Binding Activity**




**Recombinant Human Integrin alpha V beta 3 Fc Chimera Protein Binding Activity.** In a functional ELISA, Recombinant Human Integrin alpha V beta 3 Fc Chimera Protein (Catalog # 11648-AV) binds to Recombinant Human Vitronectin (Catalog # 2308-VN) with an $ED_{50}$ of 60.0-600 ng/mL.

**SDS-PAGE**




**Recombinant Human Integrin alpha V beta 3 Fc Chimera Protein SDS-PAGE.** 2 µg/lane of Recombinant Human Integrin alpha V beta 3 Fc Chimera Protein (Catalog # 11648-AV) was resolved with SDS-PAGE under non-reducing (NR) condition and visualized by Coomassie® Blue staining, showing bands at >190 kDa.



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## BACKGROUND

Integrin αVβ3 together with αIIbβ$_3$, constitutes the only known β3 Integrins (1-3). The non-covalent heterodimer of 170 kDa αV/CD51 and 93 kDa β$_3$/CD61 subunits shows wide expression, notably by endothelial cells and osteoclasts (2-4). Each subunit has a transmembrane sequence and a short cytoplasmic tail connected to the cytoskeleton. Active cell surface αVβ3 adheres to matrix proteins including vitronectin, fibronectin, fibrinogen and thrombospondin (2, 3). The ligand binding site of αVβ3 is in the N-terminal head region, formed by interaction of the β3 vWFA domain with the αV beta-propeller structure (4). The αV subunit contributes a thigh and a calf region, while the β3 subunit contains a PSI domain and four cysteine-rich I-EGF folds. The αV subunit domains termed thigh, calf-1 and calf-2 generate a “knee” region that is bent when the αVβ3 is in its constitutively inactive state. Activation, either by “inside out” signaling or by $Mg^{2+}$ or $Mn^{2+}$ binding, extends the Integrin to expose its ligand binding site (1, 4). The 962 aa human αV ECD(11) shares 92-95% aa sequence identity with mouse, rat and bovine αV while the 685 aa human β$_3$ ECD(12) shares 95% aa identity with equine and canine, and 89-92% aa identity with mouse, rat and porcine β$_3$. Two splice variants of β3 (b and c) diverge over the last 21 amino acids (aa) and lack cytoplasmic phosphorylation sites (5, 6). Another β3 splice variant diverges after the vWFA domain, producing a soluble 60 kDa form in platelets and endothelial cells (7). αVβ3 is essential for the maturation of osteoclasts and their binding and resorption of bone; it also, however, promotes their apoptosis (8, 9). M-CSF R and αVβ3 share signaling pathways during osteoclastogenesis, and deletion of either molecule causes osteopetrosis (8, 9). αVβ3 is involved in several other signaling pathways by direct interaction with receptor tyrosine kinases and ligands. For example, it cooperates with endothelial cell VEGF R2 in angiogenesis, and with IGF-1 to promote cancer cell proliferation and invasiveness (13, 14). Also, cell entry of several viruses is mediated by αVβ3 (4, 10).

**References:**

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