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VEGF-R2

Catalog # PVGS1602

Product Information

Primary Accession	P35918
Species	Mouse
Sequence	Met192-Glu761
Purity	> 95% as analyzed by SDS-PAGE
Endotoxin Level	
Biological Activity	Immobilized Mouse VEGF164 at 2.0 μg/ml (100 μl/well) can bind VEGF-R2, hFc, Mouse with EC_{50}=96.15 ng/ml when detected by Mouse Anti Human IgG Fc-HRP.
Expression System	HEK 293
Formulation	Lyophilized from a 0.2 μm filtered solution in PBS.
Reconstitution	It is recommended that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Reconstitute the lyophilized powder in ddH_2O or PBS up to 100 μg/ml.
Storage & Stability	Upon receiving, this product remains stable for up to 6 months at lower than -70°C. Upon reconstitution, the product should be stable for up to 1 week at 4°C or up to 3 months at -20°C. For long term storage it is recommended that a carrier protein (example 0.1% BSA) be added. Avoid repeated freeze-thaw cycles.

Additional Information

Gene ID	16542
Other Names	Vascular endothelial growth factor receptor 2, VEGFR-2, 2.7.10.1, Fetal liver kinase 1, FLK-1, Kinase NYK, Protein-tyrosine kinase receptor flk-1, CD309, Kdr {ECO:0000312|MGI:MGI:96683}, Flk-1, Flk1
Target Background	VEGF-R2 belongs to a family of proteins called receptor tyrosine kinases. The receptor has three main parts: one part extends out of the cell and binds to VEGF, another spans the cell's membrane, while the third part is found inside the cell. The current model of VEGF-R2 activation is that VEGF binds to individual VEGF-R2 receptor proteins on the membrane, and brings two of them close enough to form a complex called a dimer. The receptor dimer is activated and initiates signaling within the cell. VEGF-R2 is a receptor tyrosine kinase (RTK) which transduces biochemical signals via lateral dimerization in the plasma membrane. Like most RTKs, VEGF-R2 is composed of an extracellular (EC) domain, a transmembrane (TM) domain, and an intracellular (IC) domain consisting of a kinase domain and sequences required for

downstream signaling. The EC domain consists of seven immunoglobulin homology (Ig) domains, termed D1 (at the N-terminus) to D7 (closest to the membrane). VEGF-R2 binds to, and is activated by the ligands VEGF-A, VEGF-E, and a number of processed forms of VEGF-C and VEGF-D. Ligand binding to VEGF-R2 is mediated by Ig-domains 2 and 3 and the linker between D2 and D3.

Protein Information

Name	Kdr {ECO:0000312|MGI:MGI:96683}
Synonyms	Flk-1, Flk1
Function	Tyrosine-protein kinase that acts as a cell-surface receptor for VEGFA, VEGFC and VEGFD. Plays an essential role in the regulation of angiogenesis, vascular development, vascular permeability, and embryonic hematopoiesis. Promotes proliferation, survival, migration and differentiation of endothelial cells. Promotes reorganization of the actin cytoskeleton. Isoforms lacking a transmembrane domain, such as isoform 2, may function as decoy receptors for VEGFA, VEGFC and/or VEGFD. Isoform 2 plays an important role as a negative regulator of VEGFA- and VEGFC-mediated lymphangiogenesis by limiting the amount of free VEGFA and/or VEGFC and by preventing their binding to FLT4. Modulates FLT1 and FLT4 signaling by forming heterodimers. Binding of vascular growth factors to isoform 1 leads to the activation of several signaling cascades. Activation of PLCG1 leads to the production of the cellular signaling molecules diacylglycerol and inositol 1,4,5- trisphosphate and the activation of protein kinase C. Mediates activation of MAPK1/ERK2, MAPK3/ERK1 and the MAP kinase signaling pathway, as well as of the AKT1 signaling pathway. Mediates phosphorylation of PIK3R1, the regulatory subunit of phosphatidylinositol 3-kinase, reorganization of the actin cytoskeleton and activation of PTK2/FAK1. Required for VEGFA-mediated induction of NOS2 and NOS3, leading to the production of the signaling molecule nitric oxide (NO) by endothelial cells. Phosphorylates PLCG1. Promotes phosphorylation of FYN, NCK1, NOS3, PIK3R1, PTK2/FAK1 and SRC.
Cellular Location	Cell junction. Endoplasmic reticulum {ECO:0000250|UniProtKB:P35968}. Cell membrane {ECO:0000250|UniProtKB:P35968}. Note=Colocalizes with ERN1 and XBP1 in the endoplasmic reticulum in endothelial cells in a vascular endothelial growth factor (VEGF)-dependent manner (By similarity) Localized with RAP1A at cell-cell junctions {ECO:0000250|UniProtKB:P35968} [Isoform 2]: Secreted.
Tissue Location	Expressed in endothelial cells (at protein level). Detected in embryonic endothelial cells, as well as hematopoietic stem and progenitor cells. Detected in vascular endothelium. Expressed at high levels in adult heart, lung, kidney, brain and skeletal muscle, but is also expressed at lower levels in most other adult tissues

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