



# Recombinant Mouse Vascular Endothelial Growth Factor<sub>188</sub>

20140819BB



**FOR RESEARCH ONLY! NOT FOR HUMAN USE!**

<b>Cat.-no:</b>	<b>M30-095</b>
<b>Size:</b>	20 µg
<b>Lot. No.:</b>	According to product label
<b>Country of origin:</b>	Germany

## Scientific Background

<b>Gene:</b>	<i>vegf</i>
<b>Synonyms:</b>	VEGF-A, VPF

Mouse Vascular Endothelial Growth Factor<sub>188</sub> (VEGF<sub>188</sub>), a 22,1 kDa protein consisting of 188 amino acid residues, is produced as a homodimer. VEGF<sub>188</sub> is a polypeptide growth factor and a member of the platelet-derived growth factor family. It is a specific mitogen for vascular endothelial cells and a strong angiogenic factor *in vivo*.

Two high-affinity tyrosine kinase receptors for VEGF<sub>188</sub> have been identified, VEGFR-1 (FLT-1), and VEGFR-2 (Flk-1). Consistent with the endothelial cell-specific action of VEGF<sub>188</sub>, expression of both receptor genes has been found predominantly but not exclusively on endothelial cells. Expression of VEGFR-1 was also found on human monocytes, neutrophils (PMNs), bovine brain pericytes and villous and extravillous trophoblasts. In addition to its action as a mitogen it is a potent vascular permeability factor (VPF) *in vivo* and is also a chemo attractant for monocytes and endothelial cells. At least four different proteins are generated by differential splicing of the mouse VEGF gene: VEGF<sub>120</sub>, VEGF<sub>144</sub>, VEGF<sub>164</sub> and VEGF<sub>188</sub>. The most abundant form is VEGF<sub>164</sub>. Whereas VEGF<sub>120</sub>, VEGF<sub>144</sub>, and VEGF<sub>164</sub> are secreted proteins, VEGF<sub>188</sub> is strongly cell-associated. In addition, the isoforms VEGF<sub>164</sub> and VEGF<sub>188</sub> bind to heparin with high affinity. VEGF is apparently a homodimer, but preparations of VEGF show some heterogeneity on SDS gels depending of the secretion of different forms and the varying degrees of glycosylation. All dimeric forms possess similar biological activities. There is evidence that heterodimeric molecules between the different isoforms exists and that different cells and tissues express different VEGF isoforms. A related protein of VEGF is placenta growth factor (PlGF) with about 53% homology and VEGF-B with similar biological activities.

## References

1. Breier et al., Dev 114:521, 1992
2. Fiebig et al., Eur J Biochem 211:19, 1993
3. Flamme et al., Dev Biol 162:699, 1995
4. Kremer et al., Cancer Res 57:3852, 1997
5. Harris S et al, PLOS ONE 9:e104015, 2014

## Sequence

APTTEGEQKSHEVIKFMVDVYQRSYCRPIETLVDIFQEYVDEIEYIFKPSVCP  
LMRCAGCCNDEALECVPTSESNI TMQIMRIKPHQSQHIGEMSF LQHSRCECR  
PKKDRTKPEKKSVRGKGGKQKRKRKRSFKSWSVHCEPCSERRKHLFVQDPQ  
TCKCCKNTDSRCKARQLELNERTCRCDKPRR

## Database References

<b>Protein RefSeq:</b>	NP 001020421
<b>Uniprot ID:</b>	Q00731
<b>mRNA RefSeq:</b>	NM 001025250

## Product Specifications

<b>Expressed in</b>	E.coli
<b>Purity</b>	> 95% by SDS-PAGE & silver stain
<b>Endotoxin level</b>	< 0.1ng per µg of mouse VEGF <sub>188</sub>
<b>Buffer</b>	50 mM acetic acid
<b>Stabilizer</b>	None
<b>Formulation</b>	lyophilized
<b>Length (aa):</b>	188
<b>MW:</b>	44.2 kDa
<b>Result by N-terminal sequencing</b>	APTTEGE

**Stability:** Lyophilized samples are stable for greater than six months at -20°C to -70°C. Reconstituted VEGF<sub>188</sub> should be stored in working aliquots at -20°C.

**Reconstitution:** The lyophilized VEGF<sub>188</sub> should be reconstituted in 50 mM acetic acid to a concentration not lower than 50 µg/ml. For long term storage we recommend to add at least 0.1% human or bovine serum albumin.



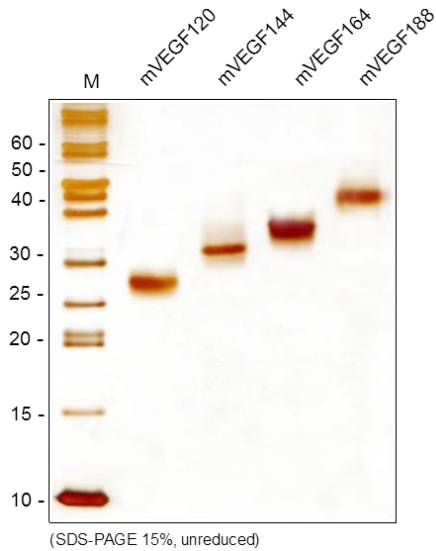
**AVOID REPEATED FREEZE AND THAW CYCLES!**

**Biological Activity:** Measured by cell proliferation of human umbilical vein endothelial cells (HUVEC) in the range of 2-20 ng/ml.

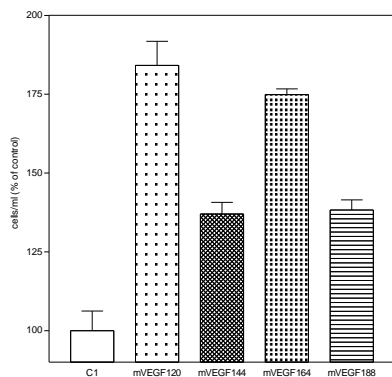


# Recombinant Mouse Vascular Endothelial Growth Factor<sub>188</sub>

## Handling/Application



**Figure 1:** SDS-PAGE analysis of recombinant mouse VEGF-A isoforms produced in *E. coli*. Samples were loaded under non-reducing conditions in 15% SDS-polyacrylamide gel and stained with Silver stain.



**Figure 2:** Stimulation of cell proliferation in primary human umbilical vein endothelial cells (HUVEC) by recombinant mouse VEGF-A isoforms. Values are the means ( $\pm$ SD) of triplicate determinations and expressed as percentage of control.