

DESCRIPTION

Species Reactivity	Human
Specificity	Detects human Endoglin/CD105 in direct ELISAs and Western blots. In direct ELISAs and Western blots, this antibody shows 10-50% cross-reactivity with recombinant mouse Endoglin.
Source	Monoclonal Mouse IgG ₁ Clone # 166709
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line NS0-derived recombinant human Endoglin/CD105 Glu26-Gly256 Accession # Q5T9B9
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied either lyophilized or as a 0.2 µm filtered solution in PBS.

APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
Western Blot	1 µg/mL	Recombinant Human Endoglin/CD105 (Catalog # 1097-EN) under non-reducing conditions only

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.5 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Endoglin (CD105) is a 90 kDa type I transmembrane glycoprotein of the zona pellucida (ZP) family of proteins (1-3). Endoglin and betaglycan/TβRIII are type III receptors for TGF-β superfamily ligands, sharing 71% aa identity in the transmembrane (TM) and cytoplasmic domains. Endoglin is highly expressed on proliferating vascular endothelial cells, chondrocytes, and syncytiotrophoblasts of term placenta, with lower amounts on hematopoietic, mesenchymal and neural crest stem cells, activated monocytes, and lymphoid and myeloid leukemic cells (2 - 5). Human endoglin cDNA encodes 658 amino acids (aa) including a 25 aa signal sequence, a 561 aa extracellular domain (ECD) with an orphan domain and a two-part ZP domain, a TM domain and a 47 aa cytoplasmic domain (1-3). An isoform with a 14 aa cytoplasmic domain (S-endoglin) can oppose effects of long (L) endoglin (6, 7). The human endoglin ECD shares 65-72% aa identity with mouse, rat, bovine, porcine and canine endoglin. Endoglin homodimers interact with TGF-β1 and TGF-β3 (but not TGF-β2), but only after binding TβRII (8). Similarly, they interact with Activin A and BMP-7 via activin type IIA or B receptors, and with BMP-2 via BMPRI-IA/ALK-3 or BMPRI-IB/ALK-6 (9). BMP-9, however, is reported to bind endoglin directly (10). Endoglin modifies ligand-induced signaling in multiple ways. For example, expression of endoglin can inhibit TGF-β1 signals but enhance BMP-7 signals in the same myoblast cell line (11). In endothelial cells, endoglin inhibits TβRI/ALK-5, but enhances ALK1-mediated activation (12). Deletion of mouse endoglin causes lethal vascular and cardiovascular defects, and human endoglin haploinsufficiency can cause the vascular disorder, hereditary hemorrhagic telangiectasia type I (13, 14). These abnormalities confirm the essential function of endoglin in differentiation of smooth muscle, angiogenesis, and neovascularization (2-4, 12-14). In preeclampsia of pregnancy, high levels of proteolytically generated soluble endoglin and VEGF R1 (sFlt-1), along with low placental growth factor (PlGF), are pathogenic due to antiangiogenic activity (15).

References:

1. Gougos, A. and Letarte, M. (1990) *J. Biol. Chem.* **265**:8361.
2. ten Dijke, P. *et al.* (2008) *Angiogenesis* **11**:79.
3. Bernabeu, C. *et al.* (2007) *J. Cell. Biochem.* **102**:1375.
4. Mancini, M.L. *et al.* (2007) *Dev. Biol.* **308**:520.
5. Moody, J.L. *et al.* (2007) *Stem Cells* **25**:2809.
6. Velasco, S. *et al.* (2008) *J. Cell Sci.* **121**:913.
7. Perez-Gomez, E. *et al.* (2005) *Oncogene* **24**:4450.
8. Cheifetz, S. *et al.* (1992) *J. Biol. Chem.* **267**:19027.
9. Barbara, N.P. *et al.* (1999) *J. Biol. Chem.* **274**:584.
10. Scharpfenecker, M. *et al.* (2007) *J. Cell Sci.* **120**:964.
11. Scherner, O. *et al.* (2007) *J. Biol. Chem.* **282**:13934.
12. Pece-Barbara, N. *et al.* (2005) *J. Biol. Chem.* **280**:27800.
13. Arthur, H.M. *et al.* (2000) *Dev. Biol.* **217**:42.
14. Lebrin, F. and C.L. Mummery (2008) *Trends Cardiovasc. Med.* **18**:25.
15. Venkatesha, S. *et al.* (2006) *Nat. Med.* **12**:642.