

**TGF- $\beta$  (56E4) Rabbit mAb**

**Orders:** 877-616-CELL (2355)  
orders@cellsignal.com

**Support:** 877-678-TECH (8324)

**Web:** info@cellsignal.com  
cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

**For Research Use Only. Not for Use in Diagnostic Procedures.**

<b>Applications:</b> W	<b>Reactivity:</b> H	<b>Sensitivity:</b> Endogenous	<b>MW (kDa):</b> 12, 45-60	<b>Source/Isotype:</b> Rabbit IgG	<b>UniProt ID:</b> #P61812, #P01137, #P10600	<b>Entrez-Gene Id:</b> 7042, 7040, 7043
---------------------------	-------------------------	-----------------------------------	-------------------------------	--------------------------------------	--	--

**Product Usage Information****Application**

Western Blotting

**Dilution**

1:1000

**Storage**

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100  $\mu$ g/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at  $-20^{\circ}\text{C}$ . Do not aliquot the antibody.

**Specificity/Sensitivity**

TGF- $\beta$  Antibody detects recombinant TGF- $\beta$ 1 and TGF- $\beta$ 3 proteins. The antibody also detects endogenous levels of the TGF- $\beta$  precursor proteins.

**Species predicted to react based on 100% sequence homology**

Mouse, Rat, Pig

**Source / Purification**

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to a region in the carboxy terminus of TGF- $\beta$ 1 protein.

**Background**

Transforming growth factor- $\beta$  (TGF- $\beta$ ) proteins belong to the TGF- $\beta$  superfamily of cytokines that play a critical role in regulating cell proliferation and differentiation, developmental patterning and morphogenesis, and disease pathogenesis (1-3). TGF- $\beta$  ligands elicit signaling through three cell surface receptors: type I (RI), type II (RII), and type III (RIII) TGF- $\beta$  receptors. Type I and type II receptors are serine/threonine kinases that form a heteromeric complex following ligand binding to the type II receptor. In response to ligand binding, the type II receptors form a stable complex with the type I receptors, triggering phosphorylation and activation of the type I receptor (4). This results in the recruitment of receptor-mediated SMADs (SMAD2, SMAD3), which are phosphorylated by the type I kinase in an SSXS domain in the C-terminus. This leads to recruitment of the co-SMAD (SMAD4), and subsequent translocation of this heteromeric SMAD complex to the nucleus, where it regulates transcription of target genes (5-7). The type III receptor, also known as betaglycan, is a transmembrane proteoglycan with a large extracellular domain that binds TGF- $\beta$  with high affinity but lacks a cytoplasmic signaling domain. Expression of the type III receptor can regulate TGF- $\beta$  signaling through presentation of the ligand to the signaling complex (8).

Three isoforms of TGF- $\beta$ , designated TGF- $\beta$ 1, TGF- $\beta$ 2 and TGF- $\beta$ 3, are encoded by distinct genes and are expressed in a tissue specific manner (10). Each isoform is synthesized as a larger precursor protein containing a propeptide region that is removed prior to secretion. Mature TGF- $\beta$  contains two polypeptides linked by disulfide bonds to form a protein of approximately 25 kDa.

**Background References**

1. Massagué, J. et al. (2000) *Cell* 103, 295-309.
2. de Caestecker, M.P. et al. (2000) *J Natl Cancer Inst* 92, 1388-402.
3. Derynck, R. et al. (2001) *Nat Genet* 29, 117-29.
4. Derynck, R. and Feng, X.H. (1997) *Biochim Biophys Acta* 1333, F105-50.
5. Miyazono, K. et al. (2000) *Adv Immunol* 75, 115-57.
6. Massagué, J. (2000) *Nat Rev Mol Cell Biol* 1, 169-78.
7. Derynck, R. et al. (1998) *Cell* 95, 737-40.
8. López-Casillas, F. et al. (1991) *Cell* 67, 785-95.
9. Kingsley, D.M. (1994) *Genes Dev.* 8, 133-46.

**Species Reactivity**

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

**Western Blot Buffer**

**IMPORTANT:** For western blots, incubate membrane with diluted primary antibody in 5% w/v BSA, 1X TBS, 0.1% Tween@ 20 at  $4^{\circ}\text{C}$  with gentle shaking, overnight.

**Applications Key**

**W:** Western Blotting

**Cross-Reactivity Key**

H: Human

**Trademarks and Patents**

Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.

All other trademarks are the property of their respective owners. Visit [cellsignal.com/trademarks](http://cellsignal.com/trademarks) for more information.

**Limited Uses**

Except as otherwise expressly agreed in a writing signed by a legally authorized representative of CST, the following terms apply to Products provided by CST, its affiliates or its distributors. Any Customer's terms and conditions that are in addition to, or different from, those contained herein, unless separately accepted in writing by a legally authorized representative of CST, are rejected and are of no force or effect.

Products are labeled with For Research Use Only or a similar labeling statement and have not been approved, cleared, or licensed by the FDA or other regulatory foreign or domestic entity, for any purpose. Customer shall not use any Product for any diagnostic or therapeutic purpose, or otherwise in any manner that conflicts with its labeling statement. Products sold or licensed by CST are provided for Customer as the end-user and solely for research and development uses. Any use of Product for diagnostic, prophylactic or therapeutic purposes, or any purchase of Product for resale (alone or as a component) or other commercial purpose, requires a separate license from CST. Customer shall (a) not sell, license, loan, donate or otherwise transfer or make available any Product to any third party, whether alone or in combination with other materials, or use the Products to manufacture any commercial products, (b) not copy, modify, reverse engineer, decompile, disassemble or otherwise attempt to discover the underlying structure or technology of the Products, or use the Products for the purpose of developing any products or services that would compete with CST products or services, (c) not alter or remove from the Products any trademarks, trade names, logos, patent or copyright notices or markings, (d) use the Products solely in accordance with CST Product Terms of Sale and any applicable documentation, and (e) comply with any license, terms of service or similar agreement with respect to any third party products or services used by Customer in connection with the Products.