

## Rabbit Anti-Smad2 antibody

SL0718R

**Product Name** Smad2

**Chinese Name** 细胞 Signal transduction 分子 Smad-2 抗体

**Alias** Mothers against decapentaplegic homolog 2; SMAD 2; Mothers against DPP homolog 2; Smad2; hMAD 2; hSMAD2; JV18 1; JV18; JV181; MAD; MAD Related Protein 2; MADH2; MADR2; MGC22139; MGC34440; Mothers Against Decapentaplegic Homolog 2; mothers against DPP homolog 2; SMAD 2; SMAD; SMAD2\_HUMAN.

**Research Area** Tumour Cell biology Signal transduction Apoptosis Growth factors and hormones transcriptional regulatory factor Kinases and Phosphatases

**Immunogen Species** Rabbit

**Clonality** Polyclonal

**React Species** Human, Mouse, Rat, (predicted: Chicken, Dog, Cow, Rabbit, )  
WB=1:500-2000,IHC-P=1:100-500,IHC-F=1:100-500,IF=1:100-500,Flow-Cyt=1µg/Test

**Applications** (Paraffin sections need antigen repair)  
not yet tested in other applications.  
optimal dilutions/concentrations should be determined by the end user.

**Theoretical molecular weight** 52kDa

**Cellular localization** The nucleus cytoplasmic

**Form** Liquid

**Concentration** 1mg/ml

**immunogen** KLH conjugated synthetic peptide derived from human Smad2: 21-120/467

**Lsotype** IgG

**Purification** affinity purified by Protein A

**Buffer Solution** 1M TBS(pH7.4) with 1% BSA, 3% Proclin300 and 50% Glycerol.

**Storage** Shipped at 4°C. Store at -20 °C for one year. Avoid repeated freeze/thaw cycles.

**Attention** This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.

## PubMed

### [PubMed](#)

The protein encoded by this gene belongs to the SMAD, a family of proteins similar to the gene products of the Drosophila gene 'mothers against decapentaplegic' (Mad) and the C. elegans gene Sma. SMAD proteins are signal transducers and transcriptional modulators that mediate multiple signaling pathways. This protein mediates the signal of the transforming growth factor (TGF)-beta and thus regulates multiple cellular processes, such as cell proliferation, apoptosis, and differentiation. This protein is recruited to the TGF-beta receptors through its interaction with the SMAD anchor for receptor activation (SARA) protein. In response to TGF-beta signal, this protein is phosphorylated by the TGF-beta receptors. The phosphorylation induces the dissociation of the protein with SARA and the association with the family member SMAD4. The association with SMAD4 is important for the translocation of this protein into the nucleus, where it binds to target promoters and forms a transcription repressor complex with other cofactors. This protein can also be phosphorylated by activin type 1 receptor kinase, and mediates the signal from the activin. Alternatively spliced transcript variants have been observed for this gene. [provided by RefSeq, May 2012].

### **Function:**

Receptor-regulated SMAD (R-SMAD) that is an intracellular signal transducer and transcriptional modulator activated by TGF-beta (transforming growth factor) and activin type 1 receptor kinase. Binds the TRE element in the promoter region of many genes that are regulated by TGF-beta and on formation of the SMAD2/SMAD4 complex, activates transcription. May act as a tumor suppressor in colorectal carcinoma. Positively regulates PDPK1 kinase activity by stimulating its dissociation from the 14-3-3 protein YWHAQ which acts as a negative regulator.

## Product Detail

### **Subunit:**

Monomer; the absence of TGF-beta. Heterodimer; in the presence of TGF-beta. Forms a heterodimer with co-SMAD, SMAD4, in the nucleus to form the transactivation complex SMAD2/SMAD4. Interacts with AIP1, HGS, PML and WWP1. Interacts with NEDD4L in response to TGF-beta. Found in a complex with SMAD3 and TRIM33 upon addition of TGF-beta. Interacts with ACVR1B, SMAD3 and TRIM33. Interacts (via the MH2 domain) with ZFYVE9; may form trimers with the SMAD4 co-SMAD. Interacts with FOXH1, homeobox protein TGIF, PEBP2-alpha subunit, CREB-binding protein (CBP), EP300 and SKI. Interacts with SNON; when phosphorylated at Ser-465/467. Interacts with SKOR1 and SKOR2. Interacts with PRDM16. Interacts (via MH2 domain) with LEMD3. Interacts with RBPMS. Interacts with WWP1. Interacts (dephosphorylated form, via the MH1 and MH2 domains) with RANBP3 (via its C-terminal R domain); the interaction results in the export of dephosphorylated SMAD3 out of the nucleus and termination of the TGF-beta signaling. Interacts with PDPK1 (via PH domain).

### **Subcellular Location:**

Cytoplasm. Nucleus. Note=Cytoplasmic and nuclear in the absence of TGF-beta. On TGF-beta stimulation, migrates to the nucleus when complexed with SMAD4. On dephosphorylation by phosphatase PPM1A, released from the SMAD2/SMAD4 complex, and exported out of the nucleus by interaction with RANBP1.

**Tissue Specificity:**

Expressed at high levels in skeletal muscle, heart and placenta.

**Post-translational modifications:**

Phosphorylated on one or several of Thr-220, Ser-245, Ser-250, and Ser-255. In response to TGF-beta, phosphorylated on Ser-465/467 by TGF-beta and activin type 1 receptor kinases. Able to interact with SMURF2 when phosphorylated on Ser-465/467, recruiting other proteins, such as SNON, for degradation. In response to decorin, the naturally occurring inhibitor of TGF-beta signaling, phosphorylated on Ser-240 by CaMK2. Phosphorylated by MAPK3 upon EGF stimulation; which increases transcriptional activity and stability, and is blocked by calmodulin. Phosphorylated by PDPK1.

In response to TGF-beta, ubiquitinated by NEDD4L; which promotes its degradation.

Acetylated on Lys-19 by coactivators in response to TGF-beta signaling, which increases transcriptional activity. Isoform short: Acetylation increases DNA binding activity in vitro and enhances its association with target promoters in vivo. Acetylation in the nucleus by EP300 is enhanced by TGF-beta.

**Similarity:**

Belongs to the dwarfin/SMAD family.

Contains 1 MH1 (MAD homology 1) domain.

Contains 1 MH2 (MAD homology 2) domain.

**SWISS:**

Q15796

**Gene ID:**

4087

**Database links:**

[Entrez Gene: 4087](#) Human

[Entrez Gene: 17126](#) Mouse

[Entrez Gene: 29357](#) Rat

[Omim: 601366](#) Human

[SwissProt: Q15796](#) Human

[SwissProt: Q62432](#) Mouse

[SwissProt: O70436](#) Rat

[Unigene: 12253](#) Human

[Unigene: 705764](#) Human

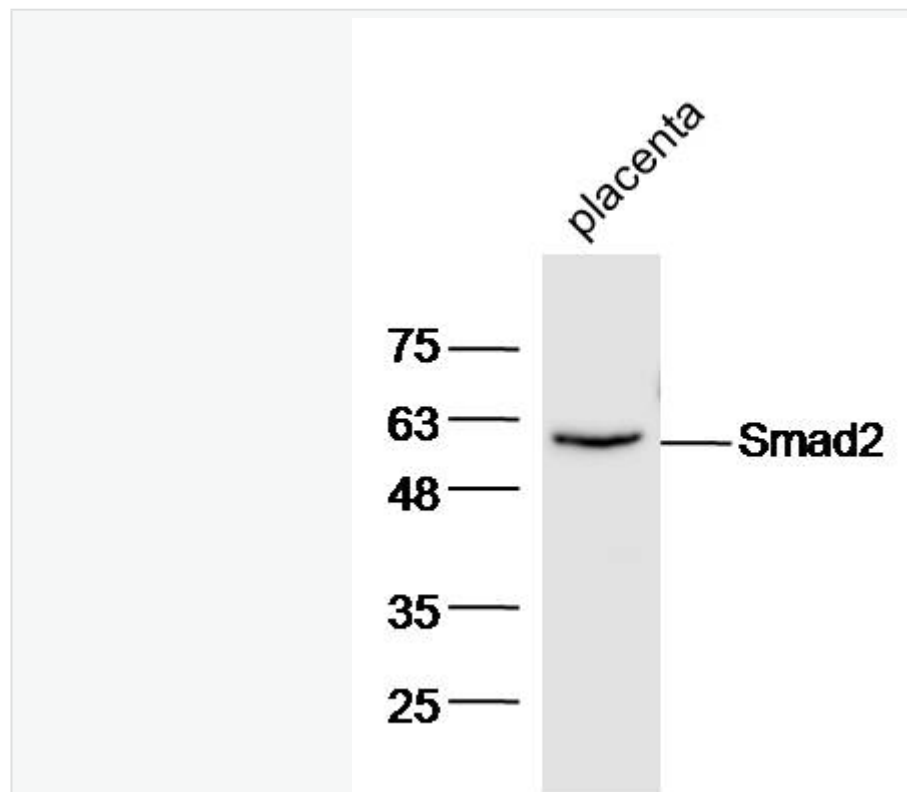
[Unigene: 391091](#) Mouse

[Unigene: 2755](#) Rat

transcriptional regulatory factor (Transcription Regulators)

Smads 家族是最新发现的 TGF- $\beta$ Signal transduction 途径中一个重要的新基因家族.是 TGF- $\beta$  特异的细胞内 Signal transduction 分子, SMAD2/3 属于受体激活的 SMADs。有学者认为: Smad2,Smad3 在某些 Tumour 中发生突变,有可能是一种 Tumour 抑制基因。 Smad2/3 蛋白与 Smad1、Smad5 有高度同源性。

Product  
Picture



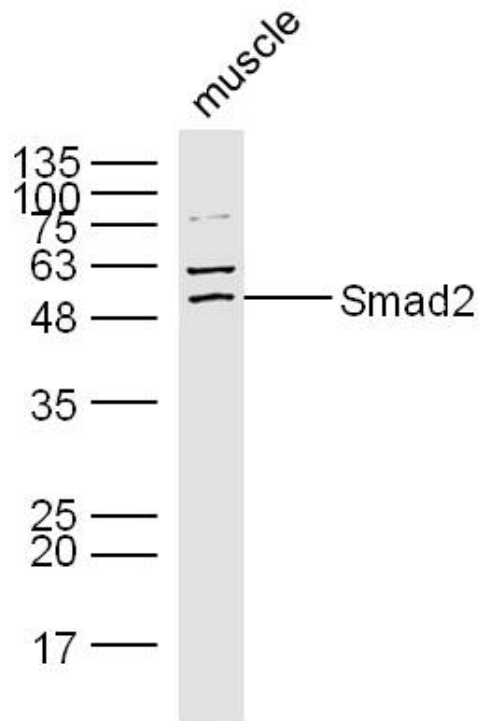
Sample:Placenta (Mouse) Lysate at 30 ug

Primary: Anti-Smad2 (SL0718R) at 1/300 dilution

Secondary: IRDye800CW Goat Anti-Mouse IgG at 1/20000 dilution

Predicted band size: 52 kD

Observed band size: 56 kD



Sample:

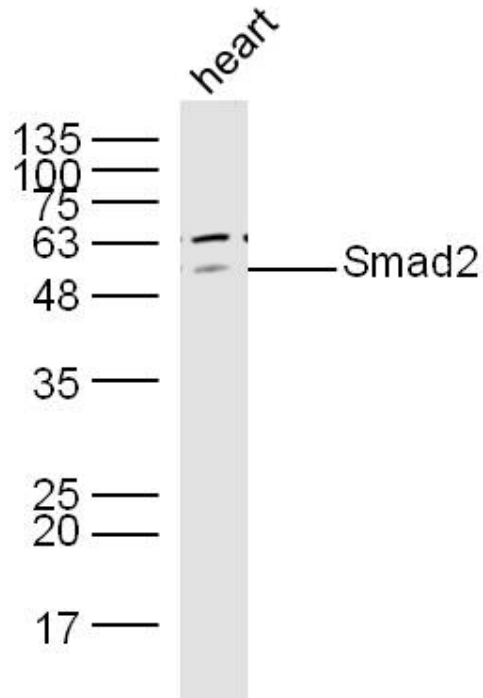
Muscle (Mouse) Lysate at 40 ug

Primary: Anti-Smad2 (SL 0718R) at 1/300 dilution

Secondary: IRDye800CW Goat Anti-Rabbit IgG at 1/20000 dilution

Predicted band size: 52 kD

Observed band size: 52 kD



Sample:

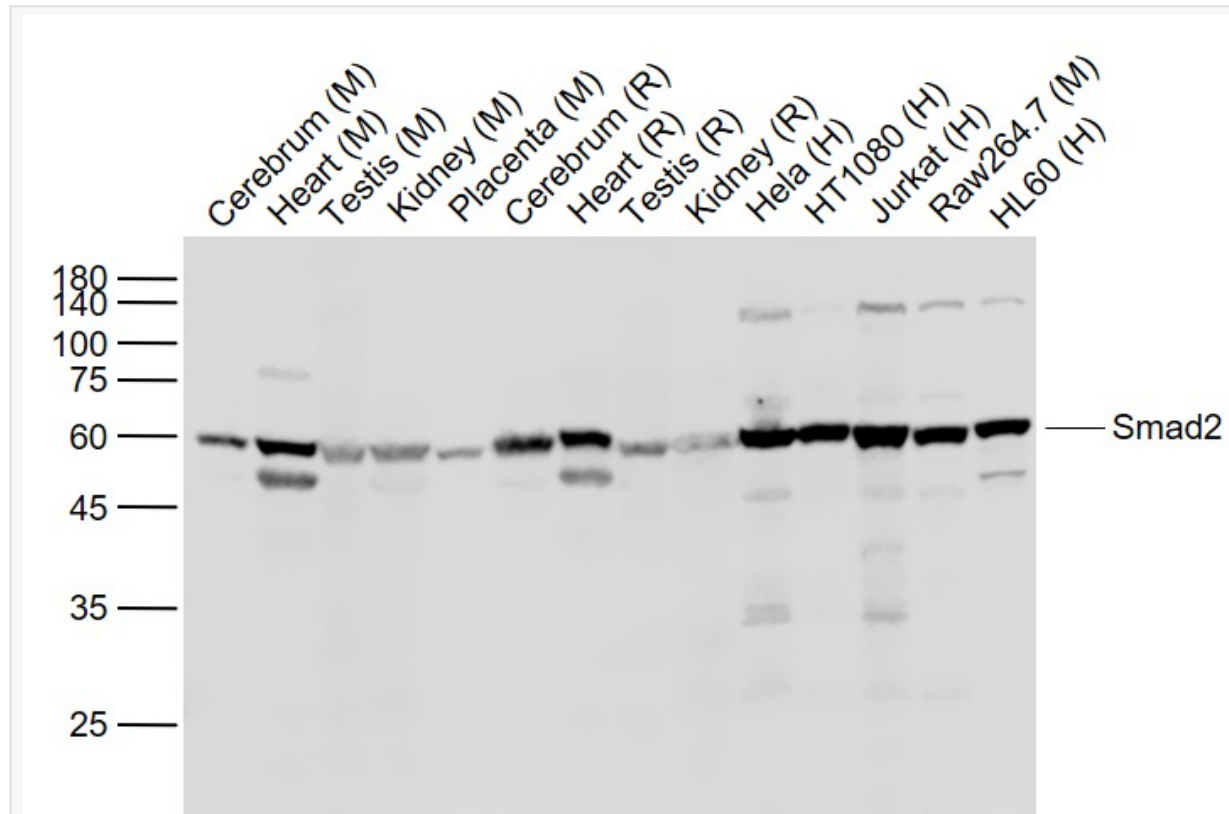
Heart (Mouse) Lysate at 40 ug

Primary: Anti-Smad2 (SL 0718R) at 1/300 dilution

Secondary: IRDye800CW Goat Anti-Rabbit IgG at 1/20000 dilution

Predicted band size: 52 kD

Observed band size: 52 kD



Sample:

Lane 1: Cerebrum (Mouse) Lysate at 40 ug

Lane 2: Heart (Mouse) Lysate at 40 ug

Lane 3: Testis (Mouse) Lysate at 40 ug

Lane 4: Kidney (Mouse) Lysate at 40 ug

Lane 5: Placenta (Mouse) Lysate at 40 ug

Lane 6: Cerebrum (Rat) Lysate at 40 ug

Lane 7: Heart (Rat) Lysate at 40 ug

Lane 8: Testis (Rat) Lysate at 40 ug

Lane 9: Kidney (Rat) Lysate at 40 ug

Lane 10: Hela (Human) Cell Lysate at 30 ug

Lane 11: HT1080 (Human) Cell Lysate at 30 ug

Lane 12: Jurkat (Human) Cell Lysate at 30 ug

Lane 13: Raw264.7 (Mouse) Cell Lysate at 30 ug

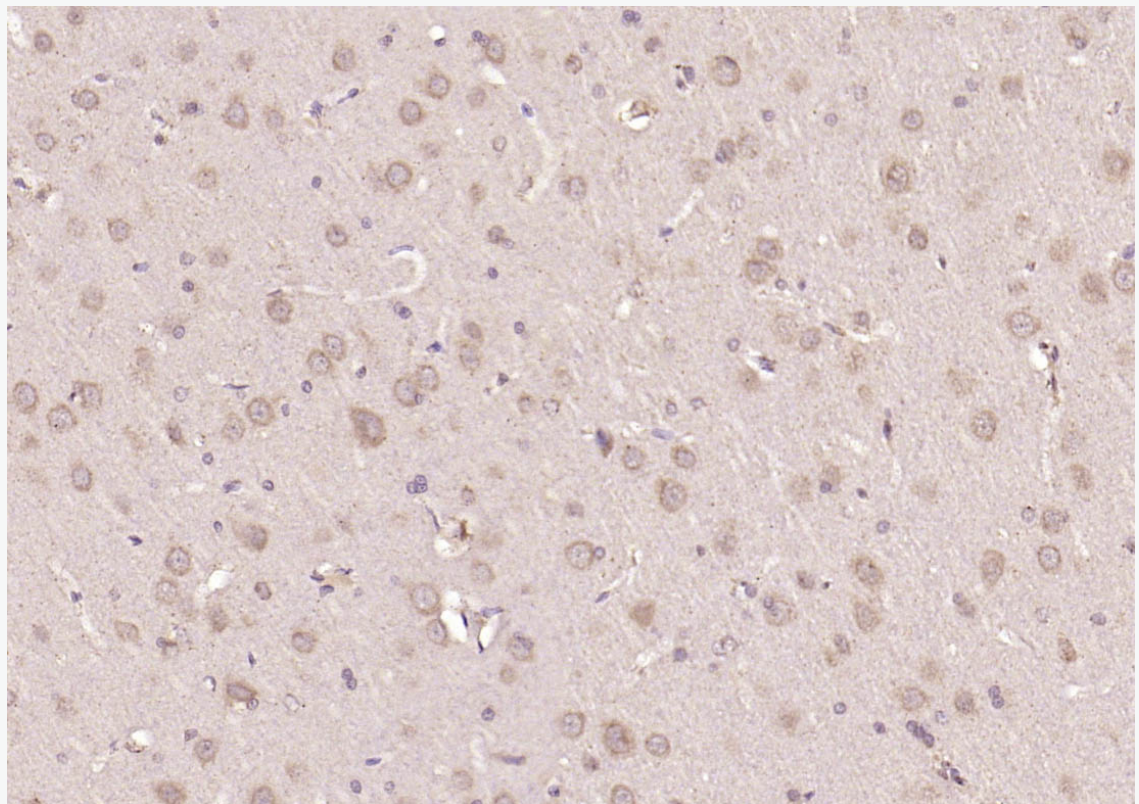
Lane 14: HL60 (Human) Cell Lysate at 30 ug

Primary: Anti-Smad2 (SL0718R) at 1/1000 dilution

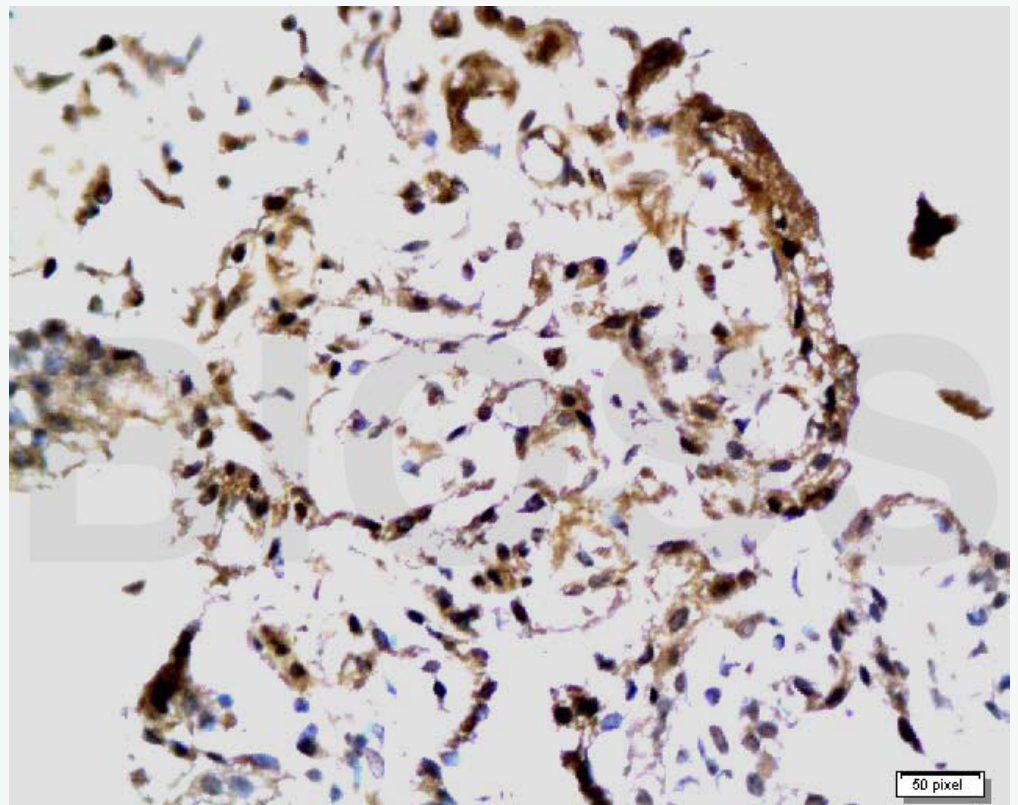
Secondary: IRDye800CW Goat Anti-Rabbit IgG at 1/20000 dilution

Predicted band size: 60 kD

Observed band size: 60 kD

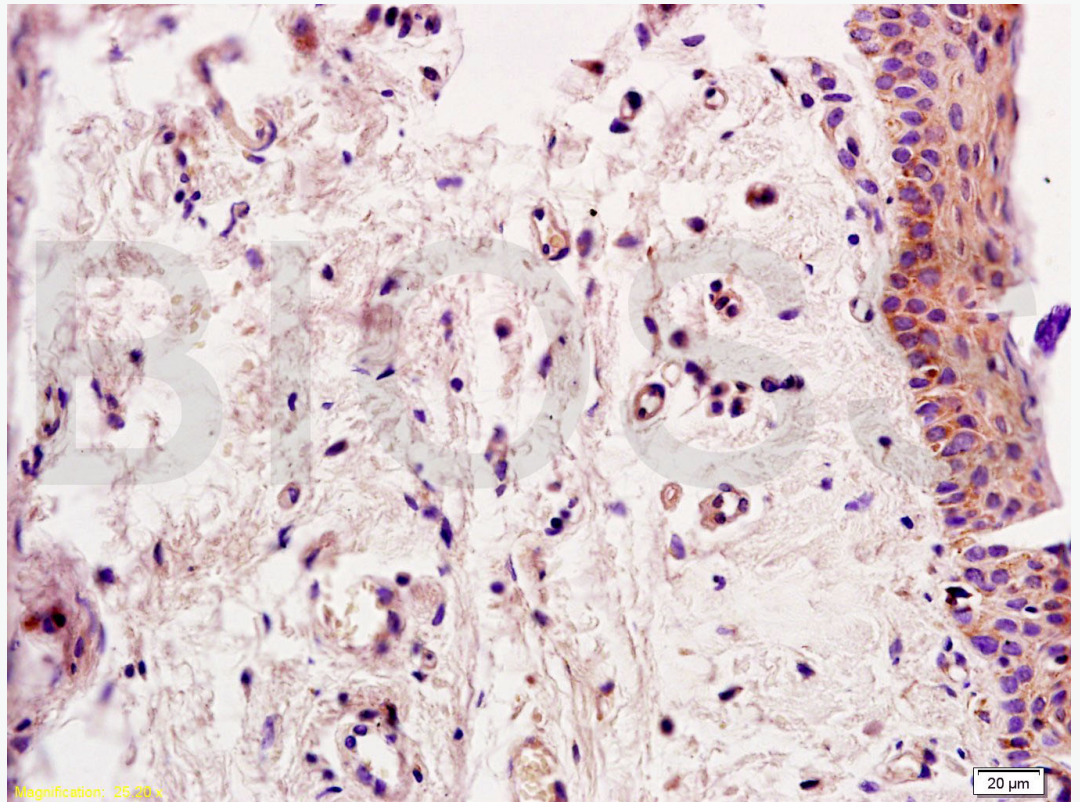


Paraformaldehyde-fixed, paraffin embedded (rat brain); Antigen retrieval by boiling in sodium citrate buffer (pH6.0) for 15min; Block endogenous peroxidase by 3% hydrogen peroxide for 20 minutes; Blocking buffer (normal goat serum) at 37°C for 30min; Antibody incubation with (Smad2) Polyclonal Antibody, Unconjugated (SL0718R) at 1:200 overnight at 4°C, followed by operating according to SP Kit(Rabbit) (sp-0023) instructions and DAB staining.



Tissue/cell: rat choroid tissue; 4% Paraformaldehyde-fixed and paraffin-embedded; Antigen retrieval: citrate buffer ( 1M, pH 6.0 ), Boiling bathing for 15min; Block endogenous peroxidase by 3% Hydrogen peroxide for 30min; Blocking buffer (normal goat serum,C-0005) at 37°C for 20 min;

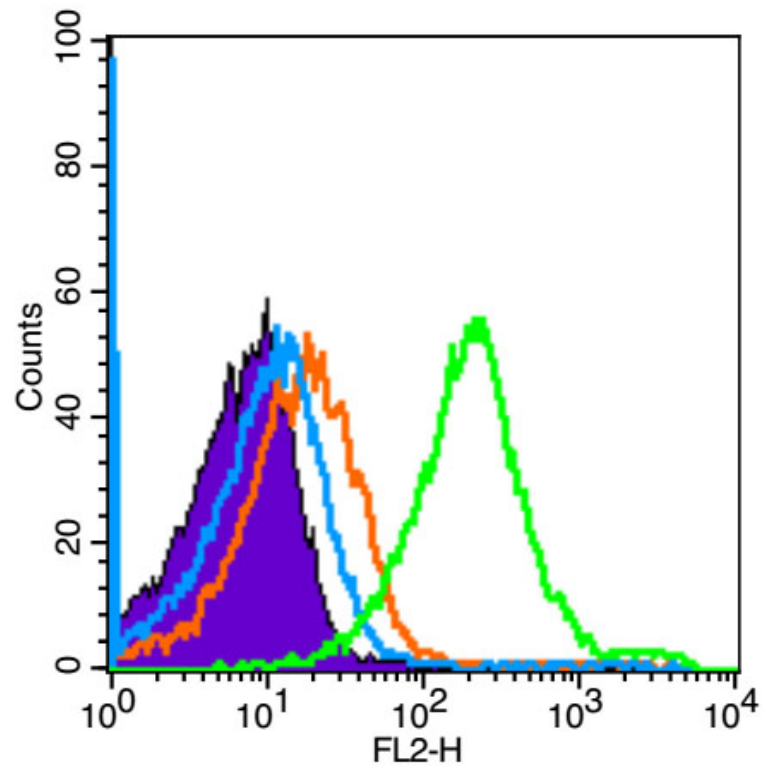
Incubation: Anti-Smad2 Polyclonal Antibody, Unconjugated(SL0718R) 1:200, overnight at 4°C, followed by conjugation to the secondary antibody(SP-0023) and DAB(C-0010) staining



Tissue/cell: rat skin tissue; 4% Paraformaldehyde-fixed and paraffin-embedded;

Antigen retrieval: citrate buffer ( 1M, pH 6.0 ), Boiling bathing for 15min; Block endogenous peroxidase by 3% Hydrogen peroxide for 30min; Blocking buffer (normal goat serum,C-0005) at 37°C for 20 min;

Incubation: Anti-Smad2 Polyclonal Antibody, Unconjugated(SL0718R) 1:200, overnight at 4°C, followed by conjugation to the secondary antibody(SP-0023) and DAB(C-0010) staining



Blank control (Black line): Mouse spleen(Black).

Primary Antibody (green line): Rabbit Anti-Smad2 antibody (SL0718R)

Dilution:  $1\mu\text{g}/10^6$  cells;

Isotype Control Antibody (orange line): Rabbit IgG .

Secondary Antibody (white blue line): Goat anti-rabbit IgG-PE

Dilution:  $1\mu\text{g}/\text{test}$ .

Protocol

The cells were fixed with 4% PFA (10min at room temperature)and then permeabilized with 90% ice-cold methanol for 20 min at room temperature. The cells were then incubated in 5%BSA goat serum to block non-specific protein-protein interactions for 15 min at room



temperature .Cells stained with Primary Antibody for 30 min at room temperature. The secondary antibody used for 40 min at room temperature. Acquisition of 20,000 events was performed.