# PRODUCT INFORMATION

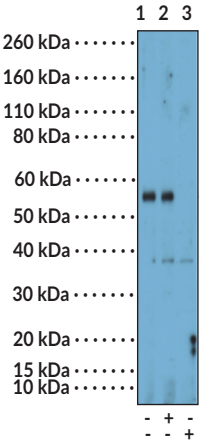
## SMAD1 (Phospho-Ser$^{463,465}$)/SMAD5 (Phospho-Ser$^{463,465}$)/SMAD9 (Phospho-Ser$^{465,467}$) Rabbit Monoclonal Antibody (Clone RM487)

*Item No. 42817*

### Overview and Properties

| | |
|---|---|
| **Contents:** | This vial contains 100 µl of protein A-affinity purified monoclonal antibody. |
| **Immunogen:** | Phosphopeptide corresponding to of SMAD1 (phospho-Ser$^{463,465}$)/SMAD5 (phospho-Ser$^{463,465}$)/SMAD9 (phospho-Ser$^{465,467}$) |
| **Cross Reactivity:** | (+) SMAD1 (phospho-Ser$^{463,465}$)/SMAD5 (phospho-Ser$^{463,465}$)/SMAD9 (phospho-Ser$^{465,467}$); (-) SMAD1/SMAD5/SMAD9 without phosphorylation |
| **Species Reactivity:** | (+) Human, mouse, rat |
| **Form:** | Liquid |
| **Storage:** | -20°C (as supplied) |
| **Stability:** | ≥1 year |
| **Storage Buffer:** | PBS with 50% glycerol, 1% BSA, and 0.09% sodium azide |
| **Concentration:** | 1.0 mg/ml |
| **Clone:** | RM487 |
| **Host:** | Rabbit |
| **Isotype:** | IgG |
| **Application:** | Western blot (WB); the recommended starting dilution is 1:1,000 - 1:2,000. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically. |

### Image




WB of mouse liver tissue lysate using SMAD1 (Phospho-Ser$^{463,465}$)/SMAD5 (Phospho-Ser$^{463,465}$)/SMAD9 (Phospho-Ser$^{465,467}$) Rabbit Monoclonal Antibody (Clone RM487) at a dilution of 1:1,000.

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## Description

SMAD proteins are intracellular transcription factors and mediators of TGF-β signaling.[1,3] They are composed of an N-terminal MAD homology 1 (MH1) domain containing nuclear localization and DNA-binding sequences and a C-terminal MH2 domain that is essential for SMAD-receptor interactions, as well as SMAD-SMAD interactions. Binding of TGF-β or bone morphogenetic protein (BMP) to their respective cell surface receptors initiates recruitment and activation of SMAD proteins. TGF-β induces SMAD2 and SMAD3 activation, while BMP binding induces activation of SMAD1, SMAD5, and SMAD9 *via* phosphorylation of serine 463 and 465 ($Ser^{463,465}$) in SMAD1 and SMAD5 and Ser465,467 in SMAD9.[1-3] SMAD1, -5, and -9 activation is associated with hypertrophy in patients with osteoarthritis, but associated with inhibition of fibrotic gene expression in various fibrotic diseases, including chronic kidney disease (CKD).[2,3] Cayman's SMAD1 (Phospho-$Ser^{463,465}$)/SMAD5 (Phospho-$Ser^{463,465}$)/SMAD9 (Phospho-$Ser^{465,467}$) Rabbit Monoclonal Antibody (Clone RM487) can be used for Western blot (WB).

## References


1. Lai, L.Y.S., Gracie, N.P., Gowripalan, A., *et al.* SMAD proteins: Mediators of diverse outcomes during infection. *Eur. J. Cell Biol.* **101(2)**, 151204 (2022).
2. Thielen, N.G.M., van Caam, A.P.M., v. Beuningen, H.M., *et al.* Separating friend from foe: Inhibition of TGF-β-induced detrimental SMAD1/5/9 phosphorylation while maintaining protective SMAD2/3 signaling in OA chondrocytes. *Osteoarthritis Cartilage* **31(11)**, 1481-1490 (2023).
3. Hu, H.H., Chen, D.Q., Wang, Y.N., *et al.* New insights into TGF-β/Smad signaling in tissue fibrosis. *Chem. Biol. Interact.* **292**, 76-83 (2018).



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