



Monoclonal Anti-Arabidopsis SIZ1 Antibody

Catalogue Number: MAB5002

ORDERING INFORMATION

Clone: 10

Lot Number: LSY000-0001

Size: 50ug

Formulation: Lyophilized powder

Storage: -20°C

Reconstitution: sterile PBS

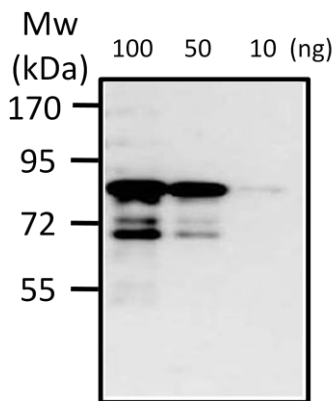
Specificity: Arabidopsis SIZ1

Immunogen: recombinant Arabidopsis SIZ1 D1F/D4R (226 bp ~ 2601 bp)

Recommended Applications:

WB, IP

Figure



The detection limit of recombinant AtSIZ1 with six different mAbs against AtSIZ1. Various concentration of recombinant AtSIZ1 were subjected into SDS-PAGE gel and transferred to membrane. The membrane was probed with mAb clone 10 of affinity purified IgG (1 $\mu\text{g}/\text{mL}$). The mAb recognized recombinant AtSIZ1 (87 kDa) at few ng levels.

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Specifications and Use

Preparation

- This antibody was produced from a hybridoma resulting from the fusion of a mouse myeloma with B cells obtained from a mouse immunized with purified, E.coli-derived, recombinant Arabidopsis SIZ1 D1F/D4R (226 bp ~ 2601 bp). The IgG fraction of the tissue culture supernatant was purified by ligand affinity chromatography.

Endotoxin level

- < 1.0 EU per 1 μg of the protein as determined by LAL method.

Formulation

- Supplied as lyophilized powder.
- Reconstitute in sterile PBS
- Centrifuge the vial before opening to prevent loss of the powder.

Storage

- Samples are stable up to 1 year from date of receipt at -20°C.
- Upon thawing, this protein can be stored under sterile conditions at 2 ~ 8°C for two weeks or at -70°C in a manual defrost freezer for three months without detectable loss of activity.
- Avoid repeated freeze-thaw cycles. Samples are recommended to be aliquot in small volumes and frozen for multiple uses.

Specificity

- This antibody was selected for its ability to recognize Arabidopsis SIZ1.

Application

- WB, IP

Background

Post-translational modification of target proteins regulate a variety of eukaryotic development, homeostasis, and stress production.^(1,2,3,4) Post-translational modification of proteins include the addition of ubiquitin-fold proteins to other intracellular proteins. In plants, at least seven other ubiquitin-fold(ing) proteins have been identified, including SUMO (small ubiquitin-like modifiers), RUB1 (related to ubiquitin1), ATG8 (autophagy8) and ATG12, UFM (ubiquitin-fold modifier), HUB (homology to ubiquitin), and MUB (membrane-anchored ubiquitin-fold protein).^(4,5) Post-tanslational modification of target proteins by SUMO leads to a number of intracellular biological functions, such as transcriptional regulation, DNA replication and repair, subnuclear targeting, chromosome segregation and stabilization, thermal adaptation, and cell cycle progression.^(6,7,8,9)

Sumo(y)lation occurs through three enzymes, E1 (activating enzyme), E2 (conjugating enzyme), and E3 (SUMO ligase) to the ϵ -amino group of particular lysine residue on the target proteins and its deconjugation by SUMO proteases from target proteins. Genes encoding all these components are present in the Arabidopsis thaliana genome.^(1,10,11,12) Recent reports demonstrated the important of sumoylation in plant development. Therefore, components of the sumoylation, including SUMO, SCE1a, SIZ1, and different SUMO protease have been investigated.^(11,12,13,15,16,17,18,19) SUMO1/2 conjugation levels to proteins increased when plants were subjected to abiotic stresses, such as a high temperature and drought, implicating that sumoylation may be involved in plant stress responses.^(10,14,15,16,17,19) Moreover, the increased sumoylation levels have been shown to attenuate abscisic acid (ABA)-mediated growth inhibition and amplify the induction of ABA- and stress-responsive genes, e.g., RD29A.⁽¹¹⁾

SUMO E3 ligase is a key component of the sumoylation pathway. Arabidopsis SIZ1 (AtSIZ1), SUMO E3 ligase, is an ortholog of yeast SIZ1 and mammalian PIAS (protein inhibitor of activated signal transducer and activator of transcription) that facilitate sumoylation of transcription factors.^(3,6,8,14,21,22,23) Yeast SIZ1 contains four conserved domain that include SAP, PINIT, SP-RING and SXS motifs.^(24,25,26,27,28) In contrast to yeast SIZ1, plant SIZ1 contained an additional an domain called PHD (plant homeobox domain).⁽²⁹⁾

It has been revealed that the various domains of SIZ1 make unique contributions to sumoylation processes. Therefore, it is possible that the various domains of SIZ1 play unique roles in biological processes of plant.

In Arabidopsis, Loss of function analyses showed that SIZ1 is a positive regulator of expression of genes involved in phosphate starvation response and the basal thermo-tolerance processes that are independent of salicylic acid (SA).^(14,15,16) Moreover, the *siz1* mutants have reduced tolerance to high temperature.⁽¹⁹⁾ However, the *siz1* mutants have elevated levels of SA, concomitant increase in pathogen-related proteins and resistance to pathogen (*Pseudomonas syringae* DC 3000). These results suggests that SIZ1 negatively regulates SA-dependent innate immunity through sumoylation of one or more target proteins.⁽³⁰⁾ In Arabidopsis, SIZ1 regulates gene expression involved plant growth, responses to drought stress, and plays a role in flowering through the activation of FLC gene by repressing FLD.^(17,20)

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