

Product Information

Monoclonal Anti-Actin (plant)

Clone 10-B3 (MabGP_a)

Purified Mouse Immunoglobulin

Product Number **A 0480**

Product Description

Monoclonal Anti-Actin (plant) (mouse IgG2b isotype) is derived from the hybridoma 10-B3 (MabGP_a) produced by the fusion of mouse myeloma cells (SP2/0 cells) and splenocytes from BALB/c mice immunized with ACT8 protein.¹ The isotype is determined using a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma ISO-2).

Monoclonal Anti-Actin (plant) recognizes actin in many plant species and in *Dictyostelium* (~45 kDa). In *Arabidopsis*, the antibody recognizes all eight actins isoforms (ACT1, 2, 3, 4, 7, 8, 11, and 12).¹ The antibody may be used in ELISA,¹ immunoblotting,¹⁻³ and immunohistochemistry.¹⁻³

Exogenous application of hormones initiates a variety of biochemical events in plants that culminate in processes directed by the cytoskeleton, such as the initiation of rapid cell proliferation, cell expansion, and differentiation. Higher plants contain actins encoded by a relatively ancient and highly divergent multigene family. *Arabidopsis* has eight functional actin genes. On the basis of their sequence and expression, they have been grouped into two major phylogenetic classes, reproductive and vegetative, and to five subclasses (two for vegetative and three for reproductive).¹⁻⁴

The reproductive actin genes ACT1, 3, and 11 are expressed strongly in mature pollen, growing pollen tubes, ovules, and to a certain extent in embryos and young meristematic tissue. The vegetative actin (ACT2, 4, 7, 8, and 12) differ from the reproductive actins by 4-7% at the amino acid level and show distinct expression patterns. The pairs ACT1 and ACT3, and ACT2 and

ACT8, differ only in one amino acid. Misexpression of ACT1 but not ACT2 induced dwarfism in plants in addition to delayed flowering, significantly reduced organ size and altered branching pattern of the leaf trichomes and inflorescence stem.¹⁻⁴ During cell differentiation and maturation in plants, there is a developmental switch in the regulation of actin isovariants. For example, during *Arabidopsis* and tobacco pollen development, there is a switch from completely vegetative to predominantly reproductive actin isovariants. Furthermore, different cell types may differ in their preference for actin isovariants to fulfill their distinct cellular functions. In *Arabidopsis* ACT7 isovariant is essential for normal phytohormone response to hormones in different organs.¹⁻⁴

Reagent

The antibody is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: ~2 mg/mL

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

Product Profile

By immunoblotting, a working antibody concentration of 1-2 µg/mL is recommended using corn leaves extracts.

Note: In order to obtain the best results using various techniques and preparations, we recommend determining optimal working dilutions by titration.

References

1. Kandasamy, M.K., et al., Plant J., **18**, 681-691 (1999).
2. Kandasamy, M.K., et al., Mol. Biol. Cell, **13**, 251-261 (2002).
3. Kandasamy, M.K., et al., Plant Cell, **13**, 1541-1554 (2001).
4. Meagher, R.B., et al., Plant Cell, **11**, 995-1005 (1999).

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