

Arp3 (A-1): sc-48344

BACKGROUND BACKGROUND

Actin polymerization is required for a variety of cell functions, including chemotaxis, cell migration, cell adhesion, and platelet activation. Cells trigger Actin polymerization through either the *de novo* nucleation of filaments from monomeric Actin, the severing of existing filaments to create uncapped barbed ends, or the uncapping existing barbed ends. The nucleation of Actin is a rate-limiting and unfavorable reaction in Actin polymerization and therefore requires the involvement of the Arp2/3 complex, which helps create new filaments and promotes the end-to-side cross-linking of Actin filaments into the branching meshwork. The Arp2/3 complex consists of the Actin-related proteins Arp2 and Arp3, and various other accessory proteins. The Arp2/3 complex promotes Actin nucleation by binding the pointed end of Actin filaments, or by associating with the side of an existing filament, and nucleates growth in the barbed direction. In addition, the Arp2/3 complex also mediates Actin cytoskeletal outgrowths that are regulated by the Rho family of small GTPases. In response to GTP-binding Cdc42, the Arp2/3 complex binds the Cdc42 substrates, namely the WASP proteins, and initiates the formation of lamellipodia and filopodia.

REFERENCES

1. Mullins, R.D., et al. 1998. The interaction of Arp2/3 complex with Actin: nucleation, high affinity pointed end capping, and formation of branching networks of filaments. *Proc. Natl. Acad. Sci. USA* 95: 6181-6186.
2. Svitkina, T.M. and Borisy, G.G. 1999. Arp2/3 complex and Actin depolymerizing factor/Cofilin in dendritic organization and treadmilling of Actin filament array in lamellipodia. *J. Cell Biol.* 145: 1009-1026.

CHROMOSOMAL LOCATION

Genetic locus: ACTR3 (human) mapping to 2q14.1; Actr3 (mouse) mapping to 1 E3.

SOURCE

Arp3 (A-1) is a mouse monoclonal antibody raised against amino acids 1-110 of Arp3 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Arp3 (A-1) is available conjugated to agarose (sc-48344 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-48344 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-48344 PE), fluorescein (sc-48344 FITC), Alexa Fluor® 488 (sc-48344 AF488), Alexa Fluor® 546 (sc-48344 AF546), Alexa Fluor® 594 (sc-48344 AF594) or Alexa Fluor® 647 (sc-48344 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-48344 AF680) or Alexa Fluor® 790 (sc-48344 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

Arp3 (A-1) is recommended for detection of Arp3 of mouse, rat and human origin by Western Blotting (starting dilution 1:1000, dilution range 1:1000-1:5000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

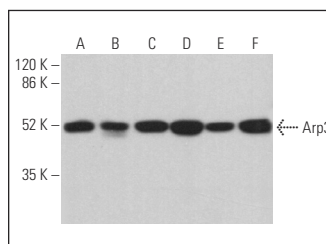
Arp3 (A-1) is also recommended for detection of Arp3 in additional species, including bovine and porcine.

Suitable for use as control antibody for Arp3 siRNA (h): sc-29739, Arp3 siRNA (m): sc-29740, Arp3 shRNA Plasmid (h): sc-29739-SH, Arp3 shRNA Plasmid (m): sc-29740-SH, Arp3 shRNA (h) Lentiviral Particles: sc-29739-V and Arp3 shRNA (m) Lentiviral Particles: sc-29740-V.

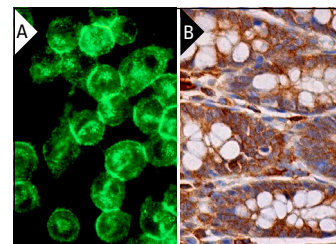
Molecular Weight of Arp3: 53 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, A-431 whole cell lysate: sc-2201 or NIH/3T3 whole cell lysate: sc-2210.

DATA



Arp3 (A-1): sc-48344. Western blot analysis of Arp3 expression in HeLa (A), A-431 (B), C32 (C), NIH/3T3 (D), A549 (E) and Jurkat (F) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



Arp3 (A-1): sc-48344. Immunofluorescence staining of methanol-fixed KNRK cells showing cytoskeletal localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human rectum tissue showing cytoplasmic staining of glandular cells (B).

SELECT PRODUCT CITATIONS

1. Padrick, S.B., et al. 2008. Hierarchical regulation of WASP/WAVE proteins. *Mol. Cell* 32: 426-438.
2. Rogerson, C., et al. 2021. Akt1-associated actomyosin remodelling is required for nuclear lamina dispersal and nuclear shrinkage in epidermal terminal differentiation. *Cell Death Differ.* 28: 1849-1864.
3. Mergault, C., et al. 2022. Inhibition of the Arp2/3 complex represses human lung myofibroblast differentiation and attenuates bleomycin-induced pulmonary fibrosis. *Br. J. Pharmacol.* 179: 125-140.
4. Fregoso, F.E., et al. 2023. Mechanism of synergistic activation of Arp2/3 complex by cortactin and WASP-family proteins. *Nat. Commun.* 14: 6894.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.