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ProductInformation

Anti-Arp1a/Centractin
Developed in Rabbit
IgG Fraction of Antiserum

Product Number **A5601**

Product Description

Anti-Arp1α/Centractin is developed in rabbit using a synthetic peptide corresponding to the mid-region of human Arp1α/centractin (amino acids 222-240), conjugated to KLH as immunogen. This sequence is identical in mouse and dog Arp1α/centractin, highly conserved (89% identity) in the α-centractin isoform, and not found in known actin isoforms. Whole antiserum is fractionated and then further purified by ion-exchange chromatography to provide the IgG fraction of antiserum that is essentially free of other rabbit serum proteins.

Anti-Arp1α/Centractin recognizes human, rat, and mouse Arp1α/centractin (45 kDa). Applications include the detection of Arp1α/centractin by immunoblotting and indirect immunofluorescence. Staining of Arp1α/centractin in immunoblotting is specifically inhibited with the Arp1α/centractin immunizing peptide (human, amino acids 222-240).

The actin-related protein Arp1α (centractin, actin-RPV), a member of the superfamily of actin-related proteins (Arp), is the major subunit of the dynactin complex, a key component of the cytoplasmic dynein motor machinery.[1-4] The major components of the dynactin complex, consisting of at least ten polypeptides, include Arp1α, p150^{Glued} and a 50 kDa polypeptide.[3, 5, 6] Arp1α, the most abundant subunit in the dynactin complex, is most similar to conventional actin (>50% amino acid identity). Two additional Arp1/ centractin isoforms have been identified: β-centractin/Arp1β (91% identity with Arp1α) and γ-centractin.[7]

The Arp1α/dynactin complex has been shown to localize to multiple structures within the cell, including membrane organelles, the centrosome, spindle poles, and spindle pole microtubules during mitosis and prometaphase kinetochores. It regulates dynein-mediated vesicle movement on microtubules as well as spindle assembly and cell division.

Arp1α polymerizes in a 37 nm filament that contains 8 or 9 Arp1α monomers to form the base of the dynactin complex. The Arp1α filament is capped by the CapZ protein at one end, and by the p62, p27, p25 subunits and Arp11, at the pointed end complex.[6, 8, 9] A lateral projection of the Arp1α filament consists of a p150^{Glued} dimer. p150^{Glued} binds to Arp1α via a C-terminal highly charged motif and to microtubules via an N-terminal CAP-Gly motif. Disruption of the binding of p150^{Glued} either to Arp1α or to the intermediate chain of cytoplasmic dynein, blocks the overall motor function and disrupts mitosis?[10, 11] Arp1α interacts directly with spectrin βIII, a spectrin isoform that localizes to vesicles and to Golgi, providing a direct link between the microtubule motor complex and its vesicular cargo.[12]

Arp1α overexpression in cells results in aberrant spindle morphologies and cell cycle delay at prometaphase, suggesting a possible function of Arp1α/dynactin complex in progression through the prometaphase of mitosis.[13] In Arp1α over-expressing cells, intracellular dynactin, dynein, and the nuclear/mitotic apparatus (NuMA) protein are recruited to multiple foci associated with ectopic cytoplasmic aggregates of Arp1α. Expression of mutant Arp1α protein has no effect on mitotic cells, but results in microtubule disruption in interphase cells, by destabilizing the interaction between Arp1α and components of the dynactin complex and NuMA.

Reagent

Anti-Arp1α/Centractin is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. 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 hazards and safe handling practices.

Storage/Stability
For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at –20 °C. 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 dilutions should be discarded if not used within 12 hours.

Product Profile
For immunoblotting, a minimum working antibody dilution of 1:1,000 is recommended using a rat brain cytosol extract and a whole cell extract of the human epidermoid carcinoma A431 cell line.

For indirect immunofluorescence, a minimum working antibody dilution of 1:100 is recommended using mouse fibroblasts NIH3T cell.

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

References

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