Revision 1

Store at -20C

#8606

Actin Nucleation and Polymerization Antibody Sampler Kit

1 Kit (7 x 20 microliters)

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Phospho-Rac1/cdc42 (Ser71) Antibody	2461	20 µl	28 kDa	Rabbit
Rac1/Cdc42 Antibody	4651	20 µl	21 kDa	Rabbit
WAVE-2 (D2C8) XP® Rabbit mAb	3659	20 µl	80 kDa	Rabbit IgG
Profilin-1 (C56B8) Rabbit mAb	3246	20 µl	15 kDa	Rabbit IgG
ARP2 Antibody	3128	20 µl	44 kDa	Rabbit
ARP3 Antibody	4738	20 µl	47 kDa	Rabbit
N-WASP (30D10) Rabbit mAb	4848	20 µl	65 kDa	Rabbit
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Actin Nucleation and Polymerization Antibody Sampler Kit provides an economical means to evaluate the presence and status of actin nucleation and polymerization. The kit contains enough primary antibody to perform two western blots per primary.

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

Background

Actin nucleation is the process of forming new actin filaments and is necessary to stimulate actin polymerization. Actin polymerization is vital for cell motility, cell division, and cell adhesion. Rac and Cdc42, members of the Rho-GTPase family, play key roles in actin dynamics, membrane trafficking, transcriptional regulation, cell growth, and development (1). GTP binding stimulates the activity of Rac/Cdc42, and the hydrolysis of GTP to GDP through the intrinsic GTPase activity or Rac/Cdc42, rendering it inactive. GTP hydrolysis is aided by GTPase activating proteins (GAPs), while exchange of GDP for GTP is facilitated by guanine nucleotide exchange factors (GEFs). Another level of regulation is achieved through binding of RhoGDI, a guanine dissociation inhibitor, which retains Rho family GTPases, including Rac and Cdc42, in their inactive GDP-bound state (2,3). Hematopoietic WASP and ubiquitously expressed N-WASP are autoinhibited in unstimulated cells. Upon stimulation they are activated by Cdc42, which relieves the autoinhibition in conjunction with phosphatidyl inositol 4,5-bisphosphate (4). Three WAVE (Wasf, SCAR) family proteins are similar in sequence to WASP and N-WASP, but lack the WASP/N-WASP autoinhibition domains and are indirectly activated by Rac (4). WAVE-2 is widely distributed, while WAVE-1 and WAVE-3 are strongly expressed in the brain (5). The highly conserved ARP2/3 complex is an important actin nucleation protein complex consisting of ARP2, ARP3, and ARPC1-5. The ARP2/3 complex promotes branching of existing actin filaments and formation of daughter filaments following activation by nucleation-promoting factors, such as WASP/WAVE or cortactin (6). Profilins are conserved actin binding proteins that affect the rate of actin polymerization by binding actin monomers and promoting exchange of ADP for ATP (reviewed in 7). Profilins bind to proteins involved in the regulation of actin dynamics including paladin (8), dynamin-I (9), VASP (10), and N-WASP (11).

Background References

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