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ProductInformation

Anti-Drebrin
Developed in Rabbit
IgG Fraction of Antiserum

Product Number **D 3816**

Product Description

Anti-Drebrin is developed in rabbit using a synthetic peptide corresponding to the N-terminal region of human drebrin E/A (amino acids 22-42) conjugated to KLH as immunogen. This sequence is identical in drebrin E/A spliced isoforms (E1, E2, A and A2), identical in mouse and rat drebrin E/A, highly conserved (>85%) in chicken drebrin E/A, and has limited homology (50%) to drebrin F/HIP-55 and the Abp1/SH3P7 family of drebrin-related proteins. 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-Drebrin recognizes drebrin E/A isoforms (95 -120 kDa) and s-drebrin/A2 (approximately 45 kDa) by immunoblotting. An additional unknown band of 20 kDa may be observed in some preparations. The antibody reacts with human and rat. Staining of drebrin in immunoblotting is specifically inhibited by the drebrin immunizing peptide.

The cortical cytoskeleton, a highly cross-linked submembranal F-actin filament network, plays an important role in cell proliferation, differentiation, migration, cell morphology and oncogenic transformation. Drebrin (developmentally-regulated brain protein) is a major neuronal F-actin binding protein involved in the control of actin dynamics and neuronal morphogenesis.[1, 2] Three major isoforms of drebrin, resulting from alternative splicing of a single gene, have been identified in the brain: the embryonic isoforms designated E1 and E2 and the adult or A isoform (95-120 kDa).[3] An additional truncated form of drebrin A, s-drebrin/A2 (42 kDa), is specifically expressed in the adult brain, but not in non-neuronal tissues.[4] Drebrin is also widely expressed in a variety of cells including epithelial, endothelial, and smooth muscle cells and is associated at cell-cell adhering junction sites.[5, 6]

Drebrin has been recently identified as a member of the newly identified ADF-H family of actin-binding proteins that share the structurally conserved actin-depolymerizing factor (ADF) binding module.[7] Structurally related proteins, homologous to drebrin include Abp1/SH3P7 and HIP55/Drebrin F.[8, 9] Drebrin is composed of a single ADF-H domain at its N-terminus, followed by a non-conserved central region and a C-terminal SH3 domain. Drebrin is probably involved in actin remodeling. It colocalizes with actin filaments and dendritic-like cell processes. In drebrin-overexpressing fibroblasts, drebrin binds to F-actin with high affinity, it binds to and dissociates F-actin stabilizing proteins such as α-actinin, fascin, and tropomyosin from actin filaments.[2,10-12]

Drebrin is thought to play a central role in the formation of axons and dendrites during neuronal development and in neuronal plasticity in the adult brain.[1, 2] The expression of each drebrin isoform is regulated throughout distinct phases in neuronal development. The earliest embryonic form E1, is thought to function in migration, while the E2 isoform, which replaces E1 during embryogenesis, is believed to play a role in migration as well as formation of axons and dendrites. Drebrin E2 is present at low levels in the adult brain. The drebrin A isoform, which is only present in mature neurons, is assumed to be involved in synaptic plasticity. Drebrin E2 and A isoforms are targeted to different regions of actin localization. In neurons, the E2 isoform localizes to the submembrane region, while the A isoform is specifically located and evenly distributed throughout the post-synaptic dendritic spine.[11, 13]

Reagent

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

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 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 extract of the human epitheloid carcinoma HeLa cell line.

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

References

1. Shirao, T., J. Biochem., **117**, 231-236 (1995).
2. Ishikawa, R., et al., J. Biol. Chem., **269**, 29928-29933 (1994).
3. Shirao, T., et al., Neurosci. Res., **13**, 8106-8111 (1990).
4. Jin, M., et al., Genomics, **79**, 686-692 (2002).
5. Peitsch, W.K., et al., Eur. J. Cell Biol., **78**, 767-778 (1999).
6. Keon, B.H., et al., J. Cell Sci., **113**, 325-336 (2000).
7. Lappalainen, P., et al., Mol. Biol. Cell, **9**, 1951-1959 (1998).
8. Kessels, M.M., et al., Mol. Biol. Cell, **11**, 393-412 (2000).
9. Ensenat, D., et al., J. Biol. Chem., **274**, 33945-33950 (1999).
10. Shirao, T., et al., Exp. Cell Res., **215**, 145-153 (1994).
11. Asada, H., et al., J. Neurosci. Res., **38**, 149-159 (1994).
12. Sasaki, Y., et al., J. Neurochem., **66**, 980-988 (1996).
13. Hayashi, K., et al., J. Neuroscience, **16**, 7161-7170 (1996).

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