

Product Information

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Monoclonal Anti-c-Abl

Clone ABL-148

produced in mouse, ascites fluid

Catalog Number **A5844**

Product Description

Monoclonal Anti-c-Abl (mouse IgG2a isotype) is derived from the ABL-148 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from a BALB/c mouse immunized with a recombinant c-Abl SH2 domain. The isotype is determined by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents, Catalog Number ISO2.

Monoclonal Anti-c-Abl recognizes an epitope within the SH2 domain of the c-Abl molecule. The antibody may be used for immunoblotting (145 kDa), immunocytochemistry (predominantly cytoplasmic and some nuclear staining), immunoprecipitation and flow cytometry. Reactivity has been observed with human, monkey, bovine, rat and mouse c-Abl.

Protein tyrosine kinases play important roles in the transduction of extracellular signals. Receptor tyrosine kinases include a myriad of growth factor receptors, which are activated upon ligand binding. Differential binding of adapter proteins may impart some signal specificity, since many of the receptors use the same adapter proteins, and may also link the activation of the receptor to multiple pathways. In contrast, nonreceptor tyrosine kinases are recruited to substrates and/or activators by their SH2 and/or SH3 domains. These domains also allow them to interact with activated receptor tyrosine kinases. These kinases are divided into several groups, including the Src, Jak, Abl, Fak, Fps, Csk, Syk and Btk families, and are components of intracellular signaling cascades. There is a lot of interest in these kinases because many of them regulate different pathways and have been identified as oncogenes or components of oncogenic pathways. The Abl oncogene is implicated in several human leukemias including the majority of chronic myelocytic leukemia (CML), one fourth of adult acute lymphoblastic leukemia (ALL) and few of pediatric ALL.¹ In these leukemias the *c-abl* proto-oncogene undergoes a chromosomal translocation (9;22) producing the Philadelphia (Ph1) chromosome.^{1,2}

Molecular analysis of the breakpoints in this translocated region reveals the involvement of the *c-abl* locus from chromosome 9 and small DNA segment on chromosome 22, designated as the breakpoint cluster region (*bcr*), resulting in the formation of a fused *bcr/abl* gene. The resulting chimeric sequence encodes for an abnormal hybrid protein (210 kDa) that possesses a tyrosine kinase activity and an SH2 domain, not present in the normal *c-abl* encoded protein, but similar to that of the protein product of the transforming viral *abl* gene.^{3,4} A majority of the known protein kinases are localized at or near the plasma membranes. The c-Abl tyrosine kinase is unusual in that it has both nuclear and cytoplasmic functions. Several cytoplasmic substrates of c-Abl have been identified. These include the SH2/SH3 adaptor protein Crk and the Crk-binding protein p130^{cas}. Nuclear c-Abl has been implicated in the regulation of cell cycle-dependent and DNA damage-induced gene expression. The c-Abl protein contains three high mobility group-like domains that bind to A+T-rich DNA in a cooperative manner. While c-Abl does not select DNA sequences, it can be recruited to specific DNA-binding complexes through protein-protein interactions. Thus for instance, c-Abl interacts with the transcription factor RXF1, which binds to the palindromic EP sequence in the hepatitis virus B enhancer, and can also be recruited to an E2F-DNA binding complex, through a direct interaction with the retinoblastoma protein (RB).⁵ The p53-related protein p73, is also a substrate of the non-receptor tyrosine kinase c-Abl, in response to DNA damage.⁶⁻⁹ Apoptotic activity of p73 α requires the presence of functional, kinase-competent c-Abl. Furthermore, p73 and c-Abl can associate with each other, and this binding is mediated by PxxP motif in p73 and the SH3 domain of c-Abl. The ability of c-Abl to phosphorylate p73 is markedly increased by γ -irradiation.⁸ Antibodies reacting specifically with c-Abl are useful tools in the study of the detailed mechanisms of the signaling pathways involving c-Abl.

Reagent

Supplied as ascites fluid containing 15 mM sodium azide.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards 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, or storage in "frost-free" freezers, is 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

Immunoblotting: a minimum working dilution of 1:2,000 is determined using a whole cell extract of human melanoma cell line.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working dilution by titration test.

References

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