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ProductInformation

ANTI-Sir2 (AS-16)
Developed in Rabbit
Affinity Isolated Antibody

Product Number **S 5313**

Product Description

Anti-Sir2 (Silent Information Regulator 2) is developed in rabbit using a synthetic peptide corresponding to C-terminal amino acids 722-737 of mouse Sir2 with C-terminal added lysine. This sequence is 62% homologous to the corresponding human sequence. The antibody is affinity-purified using the immunogen peptide immobilized on agarose.

Anti-Sir2 specifically recognizes mouse Sir2 by immunoblotting (approximately 110 kDa) and immunofluorescence. In some preparations, additional lower bands may be detected. Staining of the Sir2 band is specifically inhibited by the immunizing peptide.

Eukaryotic genomes are organized as functional domains that facilitate the fundamental processes of transcription, replication, and DNA repair. Inactivation of large domains of DNA by packaging them into a specialized inaccessible chromatin structure leads to gene silencing. This type of inactivation is involved in the regulation of gene expression and is also associated with the chromosomal structure required for chromosome maintenance and inheritance.[1] Genetic and biochemical studies have identified the main regulatory sites and proteins that collaborate to assemble silenced DNA in budding yeasts.[2] Sir2, one of the silent information regulator genes, encodes a protein that promotes a compact chromatin structure, thereby preventing or silencing gene transcription at selected loci.[3,4]

Sir2 belongs to a family of proteins that is found in organisms ranging from bacteria to complex eukaryotes. Members of this family contain a 250 amino acid core domain that shares about 25-60% sequence identity.[5] Silencing occurs as a series of events initiated by formation of Sir complexes (Sir2, Sir3, Sir4). The complexes are recruited to their chromosome targets via interactions with DNA-binding proteins, followed by deacetylation of histones H3 and H4. A final step required for telomeric silencing is binding of the complex to the deacetylated histones and recruitment of the telosome to the nuclear periphery.[6]

Sir2 protein is an NAD-dependent histone deacetylase, an enzyme that removes acetyl groups from lysine residues of histone proteins and possibly other substrates. Sir2 transfers acetyl groups from its protein substrates to ADP-ribose and synthesizes o-acetyl-ADP-ribose.[7] Through histone deacetylation, Sir2 may silence chromatin.[8,9] It appears that Sir2 NAD requirement makes this protein an important player in the pathway that leads to increased life span of several species through calorie restriction. The maintenance or silencing of chromatin may be at the center of processes leading to aging of cells and development of cancer.[10]

Reagent

The product is supplied as an approximately 1.0 mg/ml solution in 0.01 M phosphate buffered saline, pH 7.4, containing 1% bovine serum albumin (BSA) and 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 hazardous 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 dilution samples should be discarded if not used within 12 hours.

Product Profile

A minimum working dilution of 1:2,000 is determined by immunoblotting using a nuclear extract of mouse 3T3-NIH cells.

A minimum working dilution of 1:50 is determined by indirect immunofluorescent staining of methanol fixed cultured mouse 3T3-NIH cells.

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

References

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