



3050 Spruce Street
Saint Louis, Missouri 63103 USA
Telephone 800-325-5832 • (314) 771-5765
Fax (314) 286-7828
email: techserv@sial.com
sigma-aldrich.com

Product Information

Monoclonal Anti-Nuclear Pore Complex Proteins

Clone 414

Purified Mouse Immunoglobulin

Product Number **N 8786**

Product Description

Monoclonal Anti-Nuclear Pore Complex Proteins (mouse IgG1 isotype) is derived from the hybridoma 414 produced by the fusion of mouse myeloma cells (NS-1 cells) and splenocytes from BALB/c mice immunized with rat liver nuclei extract.¹ The isotype is determined using Sigma ImmunoType™ Kit (Sigma ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Sigma ISO-2).

Monoclonal Anti-Nuclear Pore Complex Proteins recognizes several proteins in the nuclear pore complex of various species such as human, rat,^{1,2} mouse,⁶ *Xenopus*,⁷ and yeast³ (approx. 62-210 kDa). The antibody may be used in various immunochemical techniques including immunoblotting,^{1,3} immunoprecipitation,^{1,3} immunocytochemistry,^{1,3} and immunoelectron microscopy.^{1,3}

Nucleocytoplasmic exchanges occur through nuclear pore complexes (NPCs) that are circular apertures in the nuclear envelope where the inner and the outer nuclear membrane are joined. The NPCs, which are structurally highly conserved in all eukaryotic cells, are cylindrical supramolecular assemblies with octagonal symmetry. They contain 30-40 different proteins resulting in a complex with a molecular weight of approx. 50 kDa.⁴⁻⁵ Through the NPC there is a passive transport of small molecules (ions and water) that are smaller than 9-10 nm. Large molecules such as RNA and proteins have to be actively transported through the NPC in an energy and signal dependent manner. Many proteins interact with members of the NPC complex. For example, the importin α/β complex interacts with nuclear localization signals (NLS) in different target proteins and transports them through the NPC into the nucleus in a Ran-GTPase dependent manner. Carrier proteins that interact with proteins in the NPC and export the mRNA through the pore, mediate export of mRNA from the nucleus.⁴⁻⁵

Monoclonal antibodies to nuclear pore complex proteins (NPCs) are an important tool for studying NPC proteins and their interaction with import and export proteins.

Reagent

Monoclonal Anti-Nuclear Pore Complex Proteins is supplied as a solution in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

Antibody Concentration: approx. 1.5 mg/ml.

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. 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

By immunoblotting, a working antibody concentration of 0.5-1 $\mu\text{g/ml}$ is recommended using HeLa total cell extract.

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

References

1. Davis, L.I., and Blobel, G., *Cell*, **45**, 699-709 (1986).
2. Davis, L.I., and Blobel, G., *Proc. Natl. Acad. Sci. USA*, **84**, 7552-7556 (1987).
3. Aris, J.P., and Blobel, G., *J. Cell Biol.*, **108**, 2059-2067 (1989).
4. Rount, M.P., and Blobel, G., *J. Cell Biol.*, **123**, 771-783 (1993).
5. Rout, M.P., et al., *J. Biol. Chem.*, **276**, 16593-16596 (2001).
6. Smitherman, M., et al., *Mol. Cell. Biol.*, **20**, 5631-5642 (2000).
7. Shah., S., et al., *J. Cell Biol.*, **141**, 31-49 (1998).

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.