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Product Information

Anti-Ran antibody,Mouse monoclonal
clone ARAN1, purified from hybridoma cell culture

Product Number **R4777**

Product Description

Monoclonal Anti-Ran (mouse IgG2b isotype) is derived from the ARAN1 hybridoma produced by the fusion of mouse myeloma cells and splenocytes from BDF1 mice immunized with denatured recombinant human Ran.[1] The isotype is determined using Sigma ImmunoType™ Kit (Product Code ISO-1) and by a double diffusion immunoassay using Mouse Monoclonal Antibody Isotyping Reagents (Product Code ISO-2). The antibody is purified from culture supernatant of hybridoma cells, grown in a bioreactor.

Monoclonal Anti-Ran recognizes human, bovine, mouse, hamster, and *Xenopus laevis* Ran (approx. 25 kDa). The antibody epitope is located at the C-terminus (amino acids 207-216) which is highly negatively charged.[1] Applications include the detection of Ran by immunoblotting, immunoprecipitation, ELISA, and immunocytochemistry.[1]

Nuclear pore complexes (NPCs) permit the intracellular transport of macromolecules between the nucleus and the cytoplasm. NPCs permit both passive and active, receptor mediated transport of molecules.[2] The targeting of molecules is done by soluble proteins known as nuclear transport receptors. These transport receptors bind to the target cargo protein and carry it across the nuclear membrane through NPCs. Those that carry proteins into the nucleus are known as importins (importin-β and transportin) and those that carry them out of the nucleus into the cytoplasm are known as exportins (CAS [cellular apoptosis susceptibility gene] and CRM1/Exportin 1).[2-3] These transport receptors belong to a protein superfamily that has a Ran-GTP-binding motif.

Ran is a small GTPase of the Ras superfamily that like other GTPases exist in two states: bound to GTP or to GDP.[2-4] Ran plays an important function in the directionality of nuclear transport. In the nucleus Ran is found as RanGTP. In this form it is important for the termination of the import reaction which is mediated by a complex of the cargo protein with importin-β and its adapter protein importin-α. The binding of RanGTP to importin-β causes the release of the cargo protein from the importin-α/ importin-β complex.[5]
The import receptor (importin-β or transportin) is then exported out of the nucleus as a RanGTP complex and is released into the cytoplasm when RanGTP is converted to RanGDP by Ran-GAP1 (GTPase-activating protein).[6] Export receptors respond in the opposite way by binding cargo with much higher affinity in the presence of RanGTP and exporting them out of the nucleus as RanGTP complexes. The exported cargo is released when Ran GAP1 converts RanGTP to RanGDP.[4-7] In order to maintain the import/ export cycle, Ran has to return to the nucleus. This is achieved by a small protein called NTF2 (Nuclear transport factor 2) also known as p10, that binds RanGDP in the cytoplasm, and delivers it back into the nucleus.[8] In the nucleus RanGDP encounters RanGEF (guanine nucleotide exchange factor) and undergoes nucleotide exchange to become RanGTP.[4-7]

Monoclonals antibodies specific for Ran are an important tool for the study of intracellular transport of macro molecules between the nucleus and the cytoplasm.

Reagent

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

Antibody concentration: Approx. 2-2.5 mg/ml

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses.

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 concentration of 0.5-1 μg/ml is recommended using a total extract of Jurkat cells.

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

References

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