

**Mouse Monoclonal Antibody to RAN**  
**Purified Mouse Monoclonal Antibody**  
**Catalog # AO2328a****Specification**

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**Mouse Monoclonal Antibody to RAN - Product Information**

Application	E, WB, FC, ICC
Primary Accession	<a href="#">P62826</a>
Reactivity	Human, Mouse, Rat, Monkey
Host	Mouse
Clonality	Monoclonal
Isotype	Mouse IgG1
Calculated MW	24.4kDa KDa

**Description**

RAN (ras-related nuclear protein) is a small GTP binding protein belonging to the RAS superfamily that is essential for the translocation of RNA and proteins through the nuclear pore complex. The RAN protein is also involved in control of DNA synthesis and cell cycle progression. Nuclear localization of RAN requires the presence of regulator of chromosome condensation 1 (RCC1). Mutations in RAN disrupt DNA synthesis. Because of its many functions, it is likely that RAN interacts with several other proteins. RAN regulates formation and organization of the microtubule network independently of its role in the nucleus-cytosol exchange of macromolecules. RAN could be a key signaling molecule regulating microtubule polymerization during mitosis. RCC1 generates a high local concentration of RAN-GTP around chromatin which, in turn, induces the local nucleation of microtubules. RAN is an androgen receptor (AR) coactivator that binds differentially with different lengths of polyglutamine within the androgen receptor. Polyglutamine repeat expansion in the AR is linked to Kennedy's disease (X-linked spinal and bulbar muscular atrophy). RAN coactivation of the AR diminishes with polyglutamine expansion within the AR, and this weak coactivation may lead to partial androgen insensitivity during the development of Kennedy's disease.;

**Immunogen**

Purified recombinant fragment of human RAN (AA: 1-216) expressed in E. Coli.

**Formulation**

Purified antibody in PBS with 0.05% sodium azide

**Application Note**

ELISA: 1/10000; WB: 1/500 - 1/2000; IHC: 1/200 - 1/1000; ICC: 1/200 - 1/1000; FCM: 1/200 - 1/400

**Mouse Monoclonal Antibody to RAN - Additional Information**

**Gene ID** 5901

**Other Names**

TC4; Gsp1; ARA24

**Storage**

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

## Precautions

Mouse Monoclonal Antibody to RAN is for research use only and not for use in diagnostic or therapeutic procedures.

## Mouse Monoclonal Antibody to RAN - Protein Information

**Name** RAN

**Synonyms** ARA24 {ECO:0000303|PubMed:10400640}

## Function

GTPase involved in nucleocytoplasmic transport, participating both to the import and the export from the nucleus of proteins and RNAs (PubMed:<a href="http://www.uniprot.org/citations/10400640" target="\_blank">10400640</a>, PubMed:<a href="http://www.uniprot.org/citations/17209048" target="\_blank">17209048</a>, PubMed:<a href="http://www.uniprot.org/citations/26272610" target="\_blank">26272610</a>, PubMed:<a href="http://www.uniprot.org/citations/27306458" target="\_blank">27306458</a>, PubMed:<a href="http://www.uniprot.org/citations/8276887" target="\_blank">8276887</a>, PubMed:<a href="http://www.uniprot.org/citations/8636225" target="\_blank">8636225</a>, PubMed:<a href="http://www.uniprot.org/citations/8692944" target="\_blank">8692944</a>, PubMed:<a href="http://www.uniprot.org/citations/8896452" target="\_blank">8896452</a>, PubMed:<a href="http://www.uniprot.org/citations/9351834" target="\_blank">9351834</a>, PubMed:<a href="http://www.uniprot.org/citations/9428644" target="\_blank">9428644</a>, PubMed:<a href="http://www.uniprot.org/citations/9822603" target="\_blank">9822603</a>). Switches between a cytoplasmic GDP- and a nuclear GTP-bound state by nucleotide exchange and GTP hydrolysis (PubMed:<a href="http://www.uniprot.org/citations/11336674" target="\_blank">11336674</a>, PubMed:<a href="http://www.uniprot.org/citations/26272610" target="\_blank">26272610</a>, PubMed:<a href="http://www.uniprot.org/citations/29040603" target="\_blank">29040603</a>, PubMed:<a href="http://www.uniprot.org/citations/7819259" target="\_blank">7819259</a>, PubMed:<a href="http://www.uniprot.org/citations/8636225" target="\_blank">8636225</a>, PubMed:<a href="http://www.uniprot.org/citations/8692944" target="\_blank">8692944</a>, PubMed:<a href="http://www.uniprot.org/citations/8896452" target="\_blank">8896452</a>, PubMed:<a href="http://www.uniprot.org/citations/9351834" target="\_blank">9351834</a>, PubMed:<a href="http://www.uniprot.org/citations/9428644" target="\_blank">9428644</a>, PubMed:<a href="http://www.uniprot.org/citations/9822603" target="\_blank">9822603</a>). Nuclear import receptors such as importin beta bind their substrates only in the absence of GTP-bound RAN and release them upon direct interaction with GTP-bound RAN, while export receptors behave in the opposite way. Thereby, RAN controls cargo loading and release by transport receptors in the proper compartment and ensures the directionality of the transport (PubMed:<a href="http://www.uniprot.org/citations/8896452" target="\_blank">8896452</a>, PubMed:<a href="http://www.uniprot.org/citations/9351834" target="\_blank">9351834</a>, PubMed:<a href="http://www.uniprot.org/citations/9428644" target="\_blank">9428644</a>). Interaction with RANBP1 induces a conformation change in the complex formed by XPO1 and RAN that triggers the release of the nuclear export signal of cargo proteins (PubMed:<a href="http://www.uniprot.org/citations/20485264" target="\_blank">20485264</a>). RAN (GTP-bound form) triggers microtubule assembly at mitotic chromosomes and is required for normal mitotic spindle assembly and chromosome segregation (PubMed:<a href="http://www.uniprot.org/citations/10408446" target="\_blank">10408446</a>, PubMed:<a href="http://www.uniprot.org/citations/29040603" target="\_blank">29040603</a>). Required for normal progress through mitosis (PubMed:<a href="http://www.uniprot.org/citations/12194828" target="\_blank">12194828</a>, PubMed:<a href="http://www.uniprot.org/citations/29040603" target="\_blank">29040603</a>, PubMed:<a href="http://www.uniprot.org/citations/8421051" target="\_blank">8421051</a>). The complex with BIRC5/survivin plays a role in mitotic spindle formation by serving as a physical scaffold to help deliver the RAN effector molecule TPX2 to microtubules (PubMed:<a href="http://www.uniprot.org/citations/10408446" target="\_blank">10408446</a>).

href="http://www.uniprot.org/citations/18591255" target="\_blank">18591255</a>). Acts as a negative regulator of the kinase activity of VRK1 and VRK2 (PubMed:<a href="http://www.uniprot.org/citations/18617507" target="\_blank">18617507</a>). Enhances AR- mediated transactivation. Transactivation decreases as the poly-Gln length within AR increases (PubMed:<a href="http://www.uniprot.org/citations/10400640" target="\_blank">10400640</a>).

#### Cellular Location

Nucleus. Nucleus envelope. Cytoplasm, cytosol Cytoplasm. Melanosome Note=Predominantly nuclear during interphase (PubMed:10679025, PubMed:12194828, PubMed:8421051). Becomes dispersed throughout the cytoplasm during mitosis (PubMed:12194828, PubMed:8421051). Identified by mass spectrometry in melanosome fractions from stage I to stage IV (PubMed:17081065).

#### Tissue Location

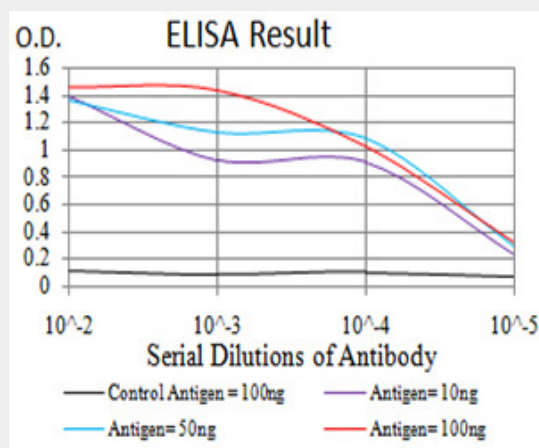
Expressed in a variety of tissues.

### Mouse Monoclonal Antibody to RAN - Protocols

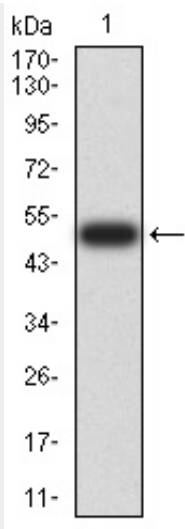
Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

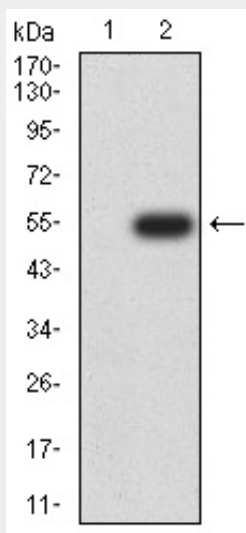
### Mouse Monoclonal Antibody to RAN - Images



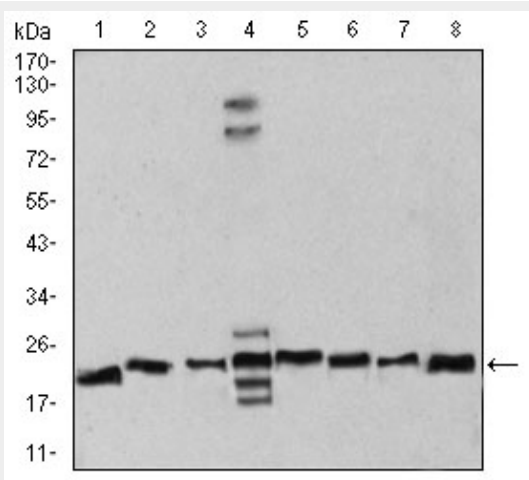
Black line: Control Antigen (100 ng);Purple line: Antigen (10ng); Blue line: Antigen (50 ng); Red line:Antigen (100 ng)



Western blot analysis using RAN mAb against human RAN (AA: 1-216) recombinant protein. (Expected MW is 50.4 kDa)

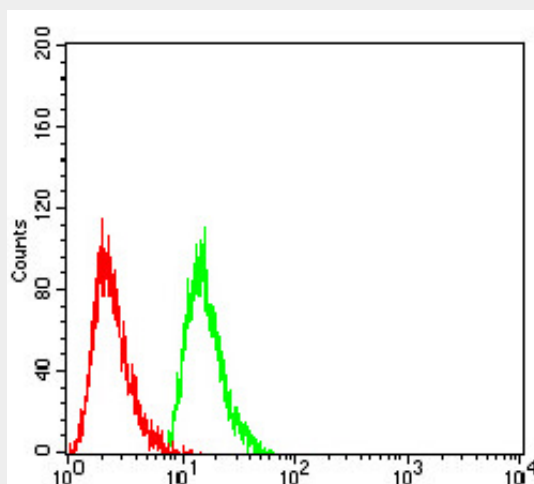


Western blot analysis using RAN mAb against HEK293 (1) and RAN (AA: 1-216)-hIgGFc transfected HEK293 (2) cell lysate.

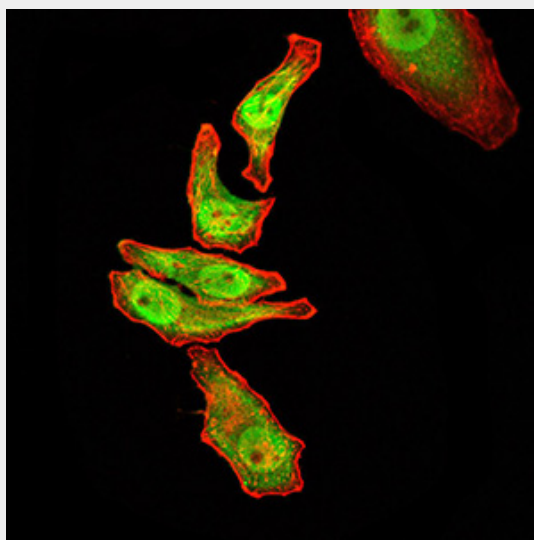


Western blot analysis using RAN mouse mAb against Hela (1), NIH/3T3 (2), A431 (3), C6 (4),

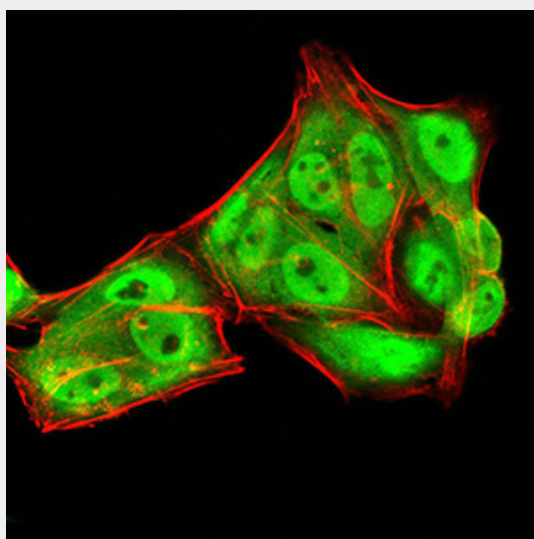
Jurkat (5), Hela (6), COS7 (7), and Jurkat (8) cell lysate.



Flow cytometric analysis of Hela cells using RAN mouse mAb (green) and negative control (red).



Immunofluorescence analysis of GC-7901 cells using RAN mouse mAb (green). Blue: DRAQ5 fluorescent DNA dye. Red: Actin filaments have been labeled with Alexa Fluor- 555 phalloidin. Secondary antibody from Fisher



Immunofluorescence analysis of Hela cells using RAN mouse mAb (green). Blue: DRAQ5 fluorescent DNA dye. Red: Actin filaments have been labeled with Alexa Fluor- 555 phalloidin. Secondary antibody from Fisher

**Mouse Monoclonal Antibody to RAN - References**

1.Int J Clin Oncol. 2013 Oct;18(5):856-63. ; 2.Clin Cancer Res. 2012 Jan 15;18(2):380-91.;