

# Anti-NUMA Antibody

Rabbit polyclonal antibody to NUMA

Catalog # AP60771

## Product Information

|                   |                        |
|-------------------|------------------------|
| Application       | WB, IHC                |
| Primary Accession | <a href="#">Q14980</a> |
| Reactivity        | Human, Mouse, Rat      |
| Host              | Rabbit                 |
| Clonality         | Polyclonal             |
| Calculated MW     | 238260                 |

## Additional Information

|                    |   |
|--------------------|---|
| Gene ID            | 4926  |
| Other Names        | NUMA; Nuclear mitotic apparatus protein 1; NuMA protein; SP-H antigen   |
| Target/Specificity | KLH-conjugated synthetic peptide encompassing a sequence within the N-term region of human NUMA. The exact sequence is proprietary. |
| Dilution           | WB~~WB (1/500 - 1/1000), IHC (1/100 - 1/200) IHC~~WB (1/500 - 1/1000), IHC (1/100 - 1/200)  |
| Format             | Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.09% (W/V) sodium azide.                     |
| Storage            | Store at -20 °C.Stable for 12 months from date of receipt   |

## Protein Information

|          |   |
|----------|---|
| Name     | NUMA1 ( <a href="#">HGNC:8059</a> )   |
| Function | Microtubule (MT)-binding protein that plays a role in the formation and maintenance of the spindle poles and the alignment and the segregation of chromosomes during mitotic cell division (PubMed: <a href="#">17172455</a> , PubMed: <a href="#">19255246</a> , PubMed: <a href="#">24996901</a> , PubMed: <a href="#">26195665</a> , PubMed: <a href="#">27462074</a> , PubMed: <a href="#">7769006</a> ). Functions to tether the minus ends of MTs at the spindle poles, which is critical for the establishment and maintenance of the spindle poles (PubMed: <a href="#">11956313</a> , PubMed: <a href="#">12445386</a> ). Plays a role in the establishment of the mitotic spindle orientation during metaphase and elongation during anaphase in a dynein-dynactin- dependent manner (PubMed: <a href="#">23870127</a> , PubMed: <a href="#">24109598</a> , PubMed: <a href="#">24996901</a> , PubMed: <a href="#">26765568</a> ). In metaphase, part of a ternary complex composed of GPSM2 and G(i) alpha proteins, that regulates the recruitment and anchorage of the dynein-dynactin complex in the mitotic cell cortex regions situated above the two spindle poles, and hence regulates the correct orientation of |

the mitotic spindle (PubMed:[22327364](#), PubMed:[23027904](#), PubMed:[23921553](#)). During anaphase, mediates the recruitment and accumulation of the dynein-dynactin complex at the cell membrane of the polar cortical region through direct association with phosphatidylinositol 4,5-bisphosphate (PI(4,5)P<sub>2</sub>), and hence participates in the regulation of the spindle elongation and chromosome segregation (PubMed:[22327364](#), PubMed:[23921553](#), PubMed:[24371089](#), PubMed:[24996901](#)). Also binds to other polyanionic phosphoinositides, such as phosphatidylinositol 3-phosphate (PIP), lysophosphatidic acid (LPA) and phosphatidylinositol triphosphate (PIP<sub>3</sub>), in vitro (PubMed:[24371089](#), PubMed:[24996901](#)). Also required for proper orientation of the mitotic spindle during asymmetric cell divisions (PubMed:[21816348](#)). Plays a role in mitotic MT aster assembly (PubMed:[11163243](#), PubMed:[11229403](#), PubMed:[12445386](#)). Involved in anastral spindle assembly (PubMed:[25657325](#)). Positively regulates TNKS protein localization to spindle poles in mitosis (PubMed:[16076287](#)). Highly abundant component of the nuclear matrix where it may serve a non-mitotic structural role, occupies the majority of the nuclear volume (PubMed:[10075938](#)). Required for epidermal differentiation and hair follicle morphogenesis (By similarity).

## Cellular Location

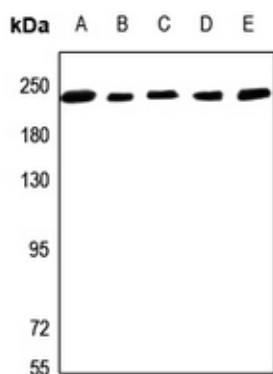
Nucleus. Nucleus, nucleoplasm. Nucleus matrix. Chromosome. Cytoplasm, cytoskeleton. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Cytoplasm, cytoskeleton, spindle pole. Cytoplasm, cell cortex. Cell membrane; Lipid-anchor; Cytoplasmic side. Lateral cell membrane {ECO:0000250|UniProtKB:E9Q7G0}. Note=Mitotic cell cycle- dependent shuttling protein that relocates from the interphase nucleus to the spindle poles and cell cortex (PubMed:10811826, PubMed:1541636). The localization to the spindle poles is regulated by AAAS (PubMed:26246606). In interphase, resides in the nuclear matrix (PubMed:1541630, PubMed:1541636, PubMed:23921553). In prophase, restricted to the interchromatin or condensed chromosome space (PubMed:10811826). In prometaphase, after nuclear envelope disassembly, forms aggregates both in the spindle midzone and at duplicated centrosomes and astral microtubules (MTs) of the bipolar spindle apparatus (PubMed:10811826). Translocates from the spindle midzone towards the spindle poles along spindle fibers in a MT- and dynein-dynactin-dependent manner until the anaphase onset (PubMed:10811826, PubMed:1541636). In metaphase, recruited to the polar cortical region in a GPSM2- and GNAI1-dependent manner (PubMed:23870127, PubMed:24109598, PubMed:24996901). Excluded from the metaphase equatorial cortical region in a RanGTP-dependent manner (PubMed:22327364, PubMed:23870127). Phosphorylation on Thr-2055 by CDK1 results in its localization at spindle poles in metaphase, but not at the cell cortex (PubMed:23921553). In anaphase, recruited and anchored at the cell membrane of the polar cortical region in a EPB41-, EPB41L2-, phosphatidylinositol-dependent and GPSM2- and G(i) alpha proteins-independent manner (PubMed:23870127, PubMed:24109598, PubMed:24371089, PubMed:24996901). Excluded from the anaphase equatorial region of the cell cortex in a RACGAP1- and KIF23-dependent and RanGTP-independent manner (PubMed:24996901). Associated with astral MTs emanating from the spindle poles during anaphase (PubMed:12445386, PubMed:24996901). Nonphosphorylated Thr-2055 localizes at the cell cortex, weakly during metaphase and more prominently during anaphase in a phosphatase PPP2CA-dependent manner (PubMed:23921553). As mitosis progresses it reassociates with telophase chromosomes very early during nuclear reformation, before substantial accumulation of lamins on chromosomal surfaces is evident (PubMed:1541636). Localizes to the tips of cortical MTs in prometaphase (PubMed:26765568). Localizes along MTs and specifically to both MT plus and minus ends (PubMed:26765568). Also accumulates at MT tips near the cell periphery (PubMed:26765568) Colocalizes with GPSM2 at mitotic spindle poles during mitosis

(PubMed:11781568, PubMed:21816348). Colocalizes with SPAG5 at mitotic spindle at prometaphase and at mitotic spindle poles at metaphase and anaphase (PubMed:27462074). Colocalizes with ABRO1 at mitotic spindle poles (PubMed:26195665). Colocalized with TNKS from prophase through to anaphase in mitosis (PubMed:16076287). Colocalizes with tubulin alpha (PubMed:12445386). CCSAP is essential for its centrosomal localization (PubMed:26562023). In horizontally retinal progenitor dividing cells, localized to the lateral cortical region (By similarity) {ECO:0000250|UniProtKB:E9Q7G0, ECO:0000269|PubMed:10811826, ECO:0000269|PubMed:11781568, ECO:0000269|PubMed:12445386, ECO:0000269|PubMed:1541630, ECO:0000269|PubMed:1541636, ECO:0000269|PubMed:16076287, ECO:0000269|PubMed:21816348, ECO:0000269|PubMed:22327364, ECO:0000269|PubMed:23870127, ECO:0000269|PubMed:23921553, ECO:0000269|PubMed:24109598, ECO:0000269|PubMed:24371089, ECO:0000269|PubMed:24996901, ECO:0000269|PubMed:26195665, ECO:0000269|PubMed:26246606, ECO:0000269|PubMed:26562023, ECO:0000269|PubMed:26765568, ECO:0000269|PubMed:27462074} [Isoform 4]: Cytoplasm, cytosol. Cytoplasm, cytoskeleton, microtubule organizing center, centrosome. Cytoplasm, cytoskeleton, spindle pole. Note=During interphase, mainly clustered at the centrosomal region in the cytosol After entry into mitosis, detected at mitotic spindle poles

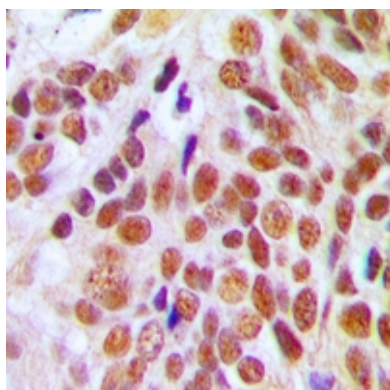
## Background

KLH-conjugated synthetic peptide encompassing a sequence within the N-term region of human NUMA. The exact sequence is proprietary.

## Images



Western blot analysis of NUMA expression in Hela (A), H446 (B), mouse lung (C), rat lung (D), rat spleen (E) whole cell lysates.



Immunohistochemical analysis of NUMA staining in human breast cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.