10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

# AMBRA1 Rabbit pAb

Catalog # AP98968

## Product Information

| | |
|---|---|
| **Application** | IHC-P, IHC-F, IF |
| **Primary Accession** | Q9C0C7 |
| **Other Accession** | Q9C0C7 |
| **Reactivity** | Rat |
| **Predicted** | Human, Mouse, Rabbit, Chicken, Dog, Horse |
| **Host** | Rabbit |
| **Clonality** | Polyclonal |
| **Calculated MW** | 142507 |
| **Physical State** | Liquid |
| **Immunogen** | KLH conjugated synthetic peptide derived from human AMBRA1 |
| **Epitope Specificity** | 221-320/1298 |
| **Isotype** | IgG |
| **Purity** | affinity purified by Protein A |
| **Buffer** | 0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol. |
| **SIMILARITY** | Contains 3 WD repeats. |
| **SUBUNIT** | Interacts with BECN1. Probably forms a complex with BECN1 and PIK3C3. |
| **Important Note** | This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications. |
| **Background Descriptions** | AMBRA1 regulates autophagy and development of the nervous system. It is a large, previously unknown protein bearing a WD40 domain at its amino terminus, regulates autophagy and has a crucial role in embryogenesis. AMBRA1 is a positive regulator of the Becn1-dependent programme of autophagy, as revealed by its overexpression and by RNA interference experiments invitro. Notably, AMBRA1 functional deficiency in mouse embryos leads to severe neural tube defects associated with autophagy impairment, accumulation of ubiquitinated proteins, unbalanced cell proliferation and excessive apoptotic cell death. |

## Additional Information

| | |
|---|---|
| **Gene ID** | 55626 |
| **Other Names** | DCAF3; WDR94; 2310079H06Rik; A130023A14; D030051N19Rik; mKIAA1736; AMRA1_HUMAN; AMBRA1; DDB1- and CUL4-associated factor 3; KIAA1736; AMRA1_MOUSE; autophagy and beclin 1 regulator 1; autophagy/beclin-1 regulator 1; WD repeat domain 94; DDB1 and CUL4 associated factor 3 |
| **Dilution** | IHC-P=1:100-500,IHC-F=1:100-500,IF=1:100-500 |
| **Storage** | Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C. |

## Protein Information

**Name**

AMBRA1 {ECO:0000303|PubMed:17589504, ECO:0000312|HGNC:HGNC:25990}

**Function**

Substrate-recognition component of a DCX (DDB1-CUL4-X-box) E3 ubiquitin-protein ligase complex involved in cell cycle control and autophagy (PubMed:20921139, PubMed:23524951, PubMed:24587252, PubMed:32333458, PubMed:33854232, PubMed:33854235, PubMed:33854239). The DCX(AMBRA1) complex specifically mediates the polyubiquitination of target proteins such as BECN1, CCND1, CCND2, CCND3, ELOC and ULK1 (PubMed:23524951, PubMed:33854232, PubMed:33854235, PubMed:33854239). Acts as an upstream master regulator of the transition from G1 to S cell phase: AMBRA1 specifically recognizes and binds phosphorylated cyclin-D (CCND1, CCND2 and CCND3), leading to cyclin-D ubiquitination by the DCX(AMBRA1) complex and subsequent degradation (PubMed:33854232, PubMed:33854235, PubMed:33854239). By controlling the transition from G1 to S phase and cyclin-D degradation, AMBRA1 acts as a tumor suppressor that promotes genomic integrity during DNA replication and counteracts developmental abnormalities and tumor growth (PubMed:33854232, PubMed:33854235, PubMed:33854239). AMBRA1 also regulates the cell cycle by promoting MYC dephosphorylation and degradation independently of the DCX(AMBRA1) complex: acts via interaction with the catalytic subunit of protein phosphatase 2A (PPP2CA), which enhances interaction between PPP2CA and MYC, leading to MYC dephosphorylation and degradation (PubMed:25438055, PubMed:25803737). Acts as a regulator of Cul5-RING (CRL5) E3 ubiquitin- protein ligase complexes by mediating ubiquitination and degradation of Elongin-C (ELOC) component of CRL5 complexes (PubMed:25499913, PubMed:30166453). Acts as a key regulator of autophagy by modulating the BECN1-PIK3C3 complex: controls protein turnover during neuronal development, and regulates normal cell survival and proliferation (PubMed:21358617). In normal conditions, AMBRA1 is tethered to the cytoskeleton via interaction with dyneins DYNLL1 and DYNLL2 (PubMed:20921139). Upon autophagy induction, AMBRA1 is released from the cytoskeletal docking site to induce autophagosome nucleation by mediating ubiquitination of proteins involved in autophagy (PubMed:20921139). The DCX(AMBRA1) complex mediates 'Lys-63'-linked ubiquitination of BECN1, increasing the association between BECN1 and PIK3C3 to promote PIK3C3 activity (By similarity). In collaboration with TRAF6, AMBRA1 mediates 'Lys-63'-linked ubiquitination of ULK1 following autophagy induction, promoting ULK1 stability and kinase activity (PubMed:23524951). Also activates ULK1 via interaction with TRIM32: TRIM32 stimulates ULK1 through unanchored 'Lys-63'-linked polyubiquitin chains (PubMed:31123703). Also acts as an activator of mitophagy via interaction with PRKN and LC3 proteins (MAP1LC3A, MAP1LC3B or MAP1LC3C); possibly by bringing damaged mitochondria onto autophagosomes (PubMed:21753002, PubMed:25215947). Also activates mitophagy by acting as a cofactor for HUWE1; acts by promoting HUWE1- mediated ubiquitination of MFN2 (PubMed:30217973). AMBRA1 is also involved in regulatory T-cells (Treg) differentiation by promoting FOXO3 dephosphorylation independently of the DCX(AMBRA1) complex: acts via interaction with PPP2CA, which enhances interaction between PPP2CA and FOXO3, leading to FOXO3 dephosphorylation and stabilization (PubMed:30513302). May act as a regulator of intracellular trafficking, regulating the localization of active PTK2/FAK and SRC (By similarity). Also involved in transcription regulation by acting as a scaffold for protein complexes at chromatin (By similarity).

**Cellular Location**

Endoplasmic reticulum. Cytoplasm, cytoskeleton. Cytoplasmic vesicle,

autophagosome {ECO:0000250|UniProtKB:A2AH22}. Mitochondrion. Cytoplasm, cytosol {ECO:0000250|UniProtKB:A2AH22}. Nucleus. Cell junction, focal adhesion {ECO:0000250|UniProtKB:A2AH22}. Note=Localizes to the cytoskeleton in absence of autophagy induction (PubMed:20921139). Upon autophagy induction, AMBRA1 relocalizes to the endoplasmic reticulum to enable autophagosome nucleation (PubMed:20921139). Partially localizes at mitochondria in normal conditions (PubMed:21358617). Also localizes to discrete punctae along the ciliary axoneme (By similarity) {ECO:0000250|UniProtKB:A2AH22, ECO:0000269|PubMed:20921139, ECO:0000269|PubMed:21358617}

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.