

# Aak1 Antibody

Catalog # ASC10782

## Product Information

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| Application           | WB, IF, ICC, E                                                                                                                                                                                                  |
| Primary Accession     | <a href="#">Q2M2I8</a>                                                                                                                                                                                          |
| Other Accession       | <a href="#">NP_055726</a> , <a href="#">148277037</a>                                                                                                                                                           |
| Reactivity            | Human, Mouse, Rat                                                                                                                                                                                               |
| Host                  | Rabbit                                                                                                                                                                                                          |
| Clonality             | Polyclonal                                                                                                                                                                                                      |
| Isotype               | IgG                                                                                                                                                                                                             |
| Calculated MW         | 103885                                                                                                                                                                                                          |
| Concentration (mg/ml) | 1 mg/mL                                                                                                                                                                                                         |
| Conjugate             | Unconjugated                                                                                                                                                                                                    |
| Application Notes     | Aak1 antibody can be used for detection of Aak1 by Western blot at 1 - 2 $\mu$ g/mL. Antibody can also be used for immunocytochemistry starting at 5 $\mu$ g/mL. For immunofluorescence start at 20 $\mu$ g/mL. |

## Additional Information

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| Gene ID                  | 22848                                                                                                                                                                                                                                        |
| Other Names              | AP2-associated protein kinase 1, 2.7.11.1, Adaptor-associated kinase 1, AAK1, KIAA1048                                                                                                                                                       |
| Target/Specificity       | AAK1;                                                                                                                                                                                                                                        |
| Reconstitution & Storage | Aak1 antibody can be stored at 4°C for three months and -20°C, stable for up to one year. As with all antibodies care should be taken to avoid repeated freeze thaw cycles. Antibodies should not be exposed to prolonged high temperatures. |
| Precautions              | Aak1 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.                                                                                                                                              |

## Protein Information

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| Name     | AAK1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Synonyms | KIAA1048                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Function | Regulates clathrin-mediated endocytosis by phosphorylating the AP2M1/mu2 subunit of the adaptor protein complex 2 (AP-2) which ensures high affinity binding of AP-2 to cargo membrane proteins during the initial stages of endocytosis (PubMed: <a href="#">11877457</a> , PubMed: <a href="#">11877461</a> , PubMed: <a href="#">12952931</a> , PubMed: <a href="#">14617351</a> , PubMed: <a href="#">17494869</a> , PubMed: <a href="#">25653444</a> ). Isoform 1 and isoform 2 display similar levels of kinase activity towards AP2M1 (PubMed: <a href="#">17494869</a> ). Preferentially, may |

phosphorylate substrates on threonine residues (PubMed:[11877457](#), PubMed:[18657069](#)). Regulates phosphorylation of other AP-2 subunits as well as AP-2 localization and AP-2-mediated internalization of ligand complexes (PubMed:[12952931](#)). Phosphorylates NUMB and regulates its cellular localization, promoting NUMB localization to endosomes (PubMed:[18657069](#)). Binds to and stabilizes the activated form of NOTCH1, increases its localization in endosomes and regulates its transcriptional activity (PubMed:[21464124](#)).

#### Cellular Location

Cell membrane {ECO:0000250|UniProtKB:F1MH24}; Peripheral membrane protein {ECO:0000250|UniProtKB:F1MH24}. Membrane, clathrin-coated pit. Presynapse {ECO:0000250|UniProtKB:P0C1X8}. Note=Active when found in clathrin-coated pits at the plasma membrane. In neuronal cells, enriched at presynaptic terminals. In non-neuronal cells, enriched at leading edge of migrating cells. {ECO:0000250|UniProtKB:P0C1X8}

#### Tissue Location

Detected in brain, heart and liver. Isoform 1 is the predominant isoform in brain.

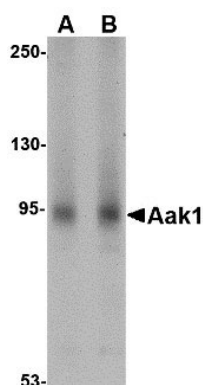
## Background

Aak1 Antibody: AP2-associated protein kinase 1 (Aak1) is a member of the Ark1/Prk1 subfamily of Ser/Thr protein kinases that are thought to regulate endocytosis by phosphorylating the accessory endocytic components. Aak1 interacts with and phosphorylates the mu2 subunit of the AP-2 complex, which promotes binding of the AP-2 to tyrosine based (Yxxphi) internalization motif-containing receptors and subsequent receptor endocytosis. At least two isoforms of Aak1 are known to exist; the longer isoform contains an extended carboxy-terminus that contains an additional clathrin-binding domain. Overexpression of this long isoform or Aak1 depletion by RNA interference impairs transferrin recycling from the early/sorting endosome, suggesting that Aak1 functions at multiple steps of the endosomal pathway by regulating transferrin internalization and its recycling back to the plasma membrane.

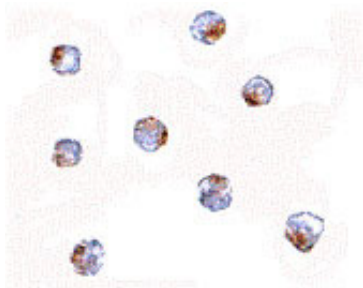
## References

Connor SD and Schmid SL. Identification of an adaptor-associated kinase, AAK1, as a regulator of clathrin-mediated endocytosis. *J. Cell Biol.*2002; 156:921-9.  
Smythe E and Ayscough KR. The Ark1/Prk1 family of protein kinases. Regulators of endocytosis and the actin skeleton. *EMBO Rep.*2003; 4:246-51.  
Ricotta D, Connor SD, Schmid SL, et al. Phosphorylation of the AP2 m2 subunit by AAK1 mediates high affinity binding to membrane protein sorting signals. *J. Cell Biol.*2002; 156:791-5.  
Connor SD and Henderson DM. A novel AAK1 splice variant functions at multiple steps of the endocytic pathway. *Mol. Biol. Cell*2007; 18:2698-706.

## Images



Western blot analysis of Aak1 in A-20 lysate with Aak1 antibody at (A) 1 and (B) 2 µg/mL.



Immunocytochemistry of Aak1 in A-20 cells with Aak1 antibody at 5  $\mu\text{g/mL}$ .

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