Pan Aurora Kinases Mouse Monoclonal Antibody

MCA-4A7

Ordering Information
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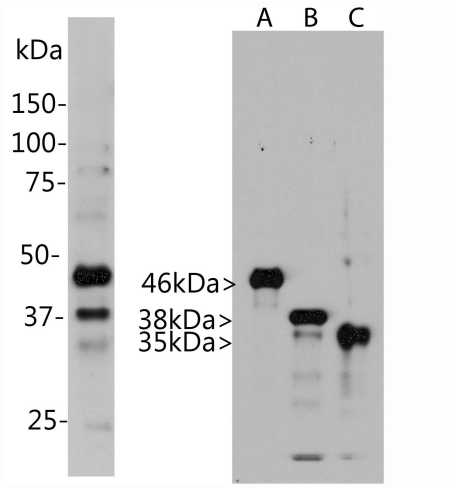
HGNC Name: *AURKA, AURKB, AURKC*
UniProt: *O14965, Q96GD4, Q9UQB9*
RRID: *AB_2572232*
Immunogen: *Full length recombinant human AURKA protein expressed from E. coli.*
Format: *Purified antibody at 1mg/mL in 50% PBS, 50% glycerol plus 5mM NaN_3*
Storage: *Store at 4°C for short term, for longer term at -20°C*
Recommended dilutions:
WB: 1:1,000. ICC/IF or IHC: 1:1,000-1:2,000.

References:

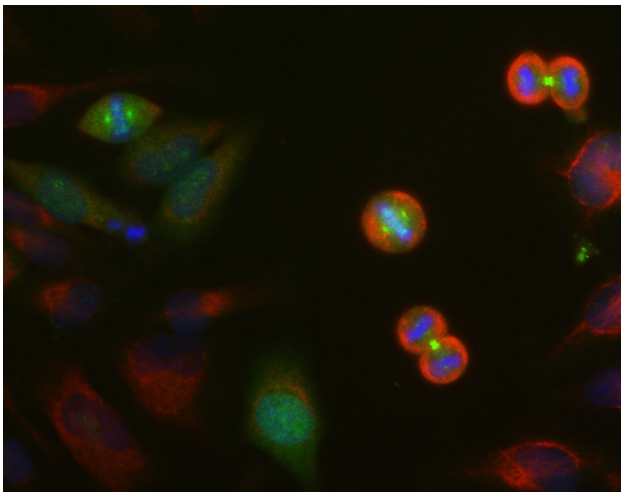
1. Glover DM, Leibowitz MH, McLean DA, Parry H. Mutations in aurora prevent centrosome separation leading to the formation of monopolar spindles. Cell 81:95-105 (1995).
2. Hochegger H, Hegarat N, Pereira-Leal JB. Aurora at the pole and equator: overlapping functions of Aurora kinases in the mitotic spindle. Open Biol. 20:120185 (2013).
3. Barr AR, Gergely F. Aurora-A: the maker and breaker of spindle poles. J. Cell Sci. 120:2987-96 (2007).
4. Andrew PD, Knatko E, Moore WJ, Swedlow JR. Mitotic mechanics: the auroras come into view. Curr. Opin. Cell Biol. 15:672-83 (2003).
5. Tang CJ, Lin CY, Tang TK. Dynamic localization and functional implications of Aurora-C kinase during male mouse meiosis. Dev. Biol. 290:398-410 (2006).
6. Andrews PD. Aurora kinases: shining lights on the therapeutic horizon? Oncogene (2005) 24:5005–15 (2005).
7. Boris AC, Bhatt HG. A comprehensive review on Aurora kinase: Small molecule inhibitors and clinical trial studies. Eur. J. Med. Chem. 140:1-19 (2017).

A sequence alignment of the 3 human aurora molecules can be downloaded from http://encorbio.com/Alignments/Aurora_alignment.pdf.

Applications	Host	Isotype	Molecular Wt.	Species Cross-Reactivity
Wb, IF/ICC, IHC	Mouse	IgG1	46kDa, 38kDa, 35kDa	Hu, Rt, Ms, Co, Pi, Ho



Left: Western blot analysis of MCA-4A7 in HeLa cells. Blot of HeLa cells treated with 100ng/ml nocodazole for 18 hours was probed with MCA-4A7. Nocodazole is a microtubule depolymerizating agent which induces cells to halt at the G2/M phase and also induces aurora kinase expression. The MCA-4A7 monoclonal binds strongly to bands at about 46kDa and 38kDa, corresponding to aurora A and aurora B. It also recognizes a weak band at 35kDa which is aurora C. Right: Blot of recombinant full length human aurora A, B and C proteins were probed with MCA-4A7. This antibody therefore reacts strongly with all three aurora kinases proteins.



HeLa cell cultures were stained with MCA-4A7 antibody (green). Strong staining in spindle poles is seen in cells at anaphase and the antibody also stains the midbodies between daughter cells. Cells were counterstained with EnCor chicken polyclonal antibody to vimentin CPCA-Vim in red, revealing cytoplasmic intermediate filaments. Blue is a DNA stain.

Background:

Aurora proteins are a family of serine/threonine protein kinases which play a key role in the regulation of cell division which were originally discovered in studies of *Drosophila* (1). Mammalian genomes encode 3 aurora kinases named aurora A, B and C, each containing a variable regulatory domain at the N terminus followed by a catalytic serine/threonine kinase domain which is almost identical between them, see here for sequence alignment. Aurora A is required for centrosome duplication, entry into mitosis, formation of bipolar spindle and mitotic checkpoint (3). Aurora B is a chromosomal passenger protein and essential for chromosome condensation, kinetochore functions, spindle checkpoint activation and cytokinesis completion (4). Aurora C is heavily expressed in testis and is involved in spermatogenesis, but is also expressed in many cell lines and cancer cells and has been less well studied to date (5). As a result it is possible to generate antibodies which react with only one aurora kinase or cross react with other aurora kinases. The aurora kinases are essential for the progression to cell division and as a result there has been much interest in the development of drugs aimed at inhibiting their activity for use as anticancer agents (6,7).

The MCA-4A7 antibody was made against full length human aurora A protein and was shown to bind aurora A and C. As a result the epitope is likely within the highly conserved serine/threonine kinase domain. The antibody can be used to identify dividing or soon to be dividing cells and the antibody is also an excellent marker of midbodies both during and after cell division.

Abbreviation Key:

mAb—Monoclonal Antibody pAb—Polyclonal Antibody WB—Western Blot IF—Immunofluorescence ICC—Immunocytochemistry IHC—Immunohistochemistry E—ELISA Hu—Human Mo—Monkey Do—Dog Rt—Rat Ms—Mouse Co—Cow Pi—Pig Ho—Horse Ch—Chicken Dr—D. rerio Dm—D. melanogaster Sm—S. mutans Ce—C. elegans Sc—S. cerevisiae Sa—S. aureus Ec—E. coli.