Catalogue# MCA-1A14: Mouse Monoclonal Antibody to Aurora A Kinase

**The Immunogen:** Aurora-A is a member of the Aurora/Ipl1-related kinase family, a novel family of serine/threonine kinases crucial for cell cycle control. The first Aurora kinase was discovered in Drosophila (1). Because mutations of this kinase cause monopolar spindles, it was given the name "Aurora", reminiscent of the North Pole (1). Mammals contain at least three aurora kinases: Aurora A, Aurora B, and Aurora C. In particular, aurora A is overexpressed in various types of cancer and considered to play critical roles in tumorigenesis (2,3). Overexpression of Aurora A overrides the cell cycle checkpoint, interferes with mitotic exit (4), and induces transformation in mammalian cells (2,3). In contrast, silencing of aurora A interrupts centrosome separation, spindle assembly and arrests G2-M transition in C. elegans and human cells (5,6). Moreover, aurora A plays an essential role for neuronal migration by modulation of microtubule organization and is required for normal axon formation (7,8). Aurora A is activated by phosphorylation at Thr-288 and activated aurora A phosphorylates numerous target proteins including p53, TPX2 and BRCA1. Expression of aurora A is cell-cycle regulated, low in G1/S, accumulates during G2/M, and decreases rapidly after. Aurora A localizes next to the centrosome late in the G1/S phase. As the cell cycle progresses, aurora A associates with the mitotic poles and the adjacent spindle microtubules. It remains associated with the spindles through metaphase and relocates to the mid-zone of the spindle right before mitotic exit (9). Monoclonal antibody MCA-1A14 was raised against full length recombinant human aurora A expressed in and purified from *E. coli*. The antibody was tested for binding to expressed human aurora A, B, C and shown to react with only Aurora A and no cross-reaction with aurora B and aurora C (see below). The HGNC name for this protein is AURKA.

**Left:** Western analysis of MCA-1A14. Blot of HeLa cells treated with 100ng/ml nocodazole for 18 hours was probed with MCA-1A11. Nocodazole is microtubule inhibitor which induces cells G2/M phase and induces aurora A expression. The MCA-1A11 monoclonal binds strongly and cleanly to a band at about 46 kDa. **Middle:** Blot of expressed human protein of aurora A, B and C was probed with MCA-1A14. MCA-1A14 recognized only Aurora A protein. **Right:** shows HeLa cell cultures stained with MCA-1A14 antibody (green). Aurora A localizes in centrosome and mitotic spindles at late mitosis. Counterstained is our chicken polyclonal antibody against Vimentin: CPCA-Vim (red). Blue is a DNA stain.

**Antibody characteristics:** MCA-1A14 is a mouse IgG2b class antibody. MCA-1A14 recognizes aurora A kinase specifically both in western blots and in immunocytochemical experiments. On blots, MCA-1A14 reveals a prominent 46kDa band, on cells in tissue cultures, MCA-1A14 reveals strong staining in centrosome.

**Suggestions for use:** The antibody is provided in the form of purified antibody at a concentration of 1mg/ml in 50% glycerol/PBS with 10mM sodium azide. Store at 4°C or -20°C. Avoid repeat freezing and thawing. The
antibody solution can be used at dilutions of at least 1:500-1:1,000 in immunofluorescence experiments. In western blotting using chemiluminescence it can be used at dilutions of 1:1,000.

**Storage Instructions:** Shipped on ice. Please store at 4°C for regular uses. For long term storage, please leave frozen at -20°C and avoid freeze/thaw cycles.

**Limitations:** This product is for research use only and is not approved for use in humans or in clinical diagnosis.

**References:**


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