# JAM-A regulates cortical dynein localization through Cdc42 to control planar spindle orientation during mitosis

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## JAM-A regulates cortical dynein localization through Cdc42 to control planar spindle orientation during mitosis [1]

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Planar spindle orientation in polarized epithelial cells depends on the precise localization of the dynein–dynactin motor protein complex at the lateral cortex. The contribution of cell adhesion molecules to the cortical localization of the dynein–dynactin complex is poorly understood. Here we find that junctional adhesion molecule-A (JAM-A [3]) regulates the planar orientation of the mitotic spindle during epithelial morphogenesis. During mitosis, JAM-A triggers a transient activation of Cdc42 [4] and PI(3)K [5], generates a gradient of PtdIns(3,4,5)P3 at the cortex and regulates the formation of the cortical actin cytoskeleton. In the absence of functional JAM-A, dynactin localization at the cortex is reduced, the mitotic spindle apparatus is misaligned and epithelial morphogenesis in three-dimensional culture is compromised. Our findings indicate that a PI(3)K- and cortical F-actin-dependent pathway of planar spindle orientation operates in polarized epithelial cells to regulate epithelial morphogenesis, and we identify JAM-A as a junctional regulator of this pathway.

To read more, please click here [6].

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