

Publication

A centrosomal function for the human Nek2 protein kinase, a member of the NIMA family of cell cycle regulators

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Nek2, a mammalian protein kinase of unknown function, is closely related to the mitotic regulator NIMA of *Aspergillus nidulans*. Here we show by both immunofluorescence microscopy and biochemical fractionation that human Nek2 localizes to the centrosome. Centrosome association occurs throughout the cell cycle, including all stages of mitosis, and is independent of microtubules. Overexpression of active Nek2 induces a striking splitting of centrosomes, whereas prolonged expression of either active or inactive Nek2 leads to dispersal of centrosomal material and loss of a focused microtubule-nucleating activity. Surprisingly, this does not prevent entry into mitosis, as judged by the accumulation of mitotically arrested cells induced by co-expression of a non-destructible B-type cyclin. These results bear on the dynamic function of centrosomes at the onset of mitosis. Moreover, they indicate that one function of mammalian Nek2 relates to the centrosome cycle and thus provide a new perspective on the role of NIMA-related kinases.

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