

Abnormal Segregation of Chromosomes and Cytokinesis in the Mitotic Mouse Early Embryos Depleted of *Nek2* by RNAi

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Nek2, NIMA-related kinase2, is a mammalian cell cycle-regulated kinase structurally related to the mitotic regulator NIMA of *Aspergillus nidulans*. Nek2 functional studies in diverse species have implicated NIMA-related kinases in G2/M progression, chromatin condensation and centrosome regulation. Nek2 has been suggested to play both meiotic and mitotic roles in mammals, but its function(s) during mouse embryo development is poorly understood. Here we have examined the role of Nek2 in early mouse embryonic mitosis with RNAi. Specific mRNA degradation mediated by double stranded RNA (dsRNA), which is termed RNA interference (RNAi), is a useful tool with which to study gene function in diverse organisms. DsRNA directed towards Nek2 mRNAs in mouse embryo effectively results in the specific reduction of the targeted mRNA in a time and dose-dependent manner. Targeting the Nek2 mRNA results in inhibiting the cytokinesis and chromosome segregation during mouse embryonic mitosis. These phenotypes related to Incenp null mouse embryo and Plk1 depleted mammalian cell line. We discuss the possibility that Nek2 related to modulate spindle dynamics, chromosome segregation, and cytokinesis in early mouse embryo development.