Non-Confidential
Technology Disclosure

Title: A novel cell cycle checkpoint under the control of the centrosome.

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Description: Centrosomes have been well characterized for their role in cell division and microtubule nucleation. Recent studies have suggested a novel cell cycle checkpoint in transition from G1 to S phase. This invention shows that the down-regulation of any one of 20 centrosome proteins by RNAi leads to cell arrest in G1/G0. Further, G1/G0 arrest is centrosome-dependent and requires the tumor suppressor p53 and the stress-induced p38 MAP kinase signal transduction pathway. These results demonstrate the presence of a centrosome damage checkpoint that prevents duplication of damaged centrosomes by cell cycle arrest thus preventing the deleterious consequences of centrosome defects on spindle function and genetic stability.

Application: The findings in this invention provide:

1. Methods for siRNA reduction of centrosome genes.
2. Methods for cell cycle arrest.
3. Methods for rescuing cells with abnormal centrosomes.
4. Novel methods for studying cell cycle.
5. Novel therapeutics for proliferative disorders, including cancers.

Advantage: This work demonstrates a novel role for the centrosome in cell cycle arrest. This invention also demonstrates a dependency of the centrosome checkpoint control on the upstream activities of p38 MAP kinase and p53.

Licensing Status: Available to license

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