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Centrosomal Nlp is an oncogenic protein that has a close relationship with tumorigenesis

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Disruption of mitotic events contributes greatly to genomic instability and results in mutator phenotypes. Indeed, abnormalities of mitotic components are closely associated with malignant transformation and tumorigenesis. Here we show that ninein-like protein (Nlp), a recently identified BRCA1-associated centrosomal protein involved in microtubule nucleation and spindle formation, is an oncogenic protein. Imunohistochemical and Western blot approaches showed that Nlp was overexpressed in approximately 80% of human breast and lung carcinomas analyzed. In human lung cancers, the results of RT-PCR, Southern blot and FISH confirmed that this deregulated expression was associated with NLP gene amplification. Further analysis revealed that Nlp exhibited strong oncogenic properties; for example, it conferred to NIH3T3 rodent fibroblasts the capacity for anchorage-independent growth in vitro and tumor formation in nude mice. Consistent with these data, transgenic mice overexpressing Nlp displayed spontaneous tumorigenesis in the breast, ovary, and testicle within 60 weeks. In addition, Nlp overexpression induced more rapid onset of radiation-induced lymphoma. Furthermore, mouse embryonic fibroblasts (MEFs) derived from Nlp transgenic mice showed centrosome amplification, suggesting that Nlp overexpression mimics BRCA1 loss. These findings demonstrate that Nlp abnormalities may contribute to genomic instability and tumorigenesis and suggest that Nlp might serve as a potential biomarker for clinical diagnosis and therapeutic target.

Biography

Shao Shujuan has completed her Ph.D and postdoctoral studies from Cancer Institute, Chinese Academy of Medical Sciences and Peking Union Medical College. She has been in charge of branches of the "National High Technology Research and Development Program (863 program)" and "National Basic Research Program of China (973 program)", 2 projects of National Natural Science Foundation of China (NSFC) and several projects supported by the Province and City. She has published 12 papers in reputed journals and highest IF score is more than 17. She has been awarded "State Council Expert for Special Allowance" in 2007.