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### Alteration in ribosomal machinery in hematologic syndromes and cancer

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Ribosomes are essential components of the protein translation machinery and are composed of more than 80 unique large and small ribosomal proteins. Recent studies show that in addition to their roles in protein translation, ribosomal proteins are also involved in extra-ribosomal functions of DNA repair, apoptosis and cellular homeostasis. Consequently, alterations in the synthesis or functioning of ribosomal proteins can lead to various hematologic syndromes. These include congenital anemia such as Diamond Blackfan anemia and Shwachman Diamond syndrome; both of which are associated with mutations in various ribosomal genes. Acquired uniallelic deletion of RPS14 gene has also been shown to lead to the 5q syndrome, a distinct subset of MDS associated with macrocytic anemia. The interaction of dysfunctional ribosomal proteins with the p53 pathway may have a causative role in these hematologic syndromes. Recent evidence shows that specific ribosomal proteins are overexpressed in liver, colon, prostate and other tumors. Ribosomal protein overexpression can promote tumorigenesis by direct effects on various oncogenes. These data point to a broad role of ribosome protein alterations in hematologic and oncologic diseases.

#### Biography

Niraj Shenoy is the youngest Internal Medicine Chief Resident at the Albert Einstein College of Medicine. His research interests include epigenetics in cancer, cancer pathways, myelodysplastic syndromes and ribosomal protein alterations in hematologic syndromes and cancer. He has published in leading hematology and oncology journals and has been an invited speaker at various international conferences. He is an Editorial Board Member of *Frontiers in Oncology* and *Journal of Tumor*. He has been inducted into the Leo. M. Davidoff Society of the Albert Einstein College of Medicine for outstanding achievement in the teaching of medical students and residents.

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