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## **Oncoprotein Sam68 links mitogenic signaling pathway and alternative splicing**

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Alternative pre-mRNA splicing is recognized as a hallmark of cancer. Changes in protein isoforms produced by alternative splicing modulate the proteome set and their functional properties which contribute to cancer development. Sam68 (Src associated in mitosis, of 68 kDa), an RNA-binding protein belongs to signal transduction and activation of RNA (STAR) family of proteins. Due to the functional motifs within the domain structure, Sam68 is associated with both signal transduction and alternative splicing events in cell. To evaluate how Sam68 is involved in changing the alternative splicing decision of cancer sustaining genes (CD44, RON, m-TOR) in response to deregulated signaling pathways in cancer cells, in-silico regulatory and functional analysis of Sam68 was carried out. Initially, expression of Sam68 and co-expressed genes in different cancer types were analyzed using microarray data from different public and commercial repositories like NCBI Gene Expression Omnibus, Gene array express and Oncomine. Based on the results gene co-expression network (GCN) was constructed. The results indicate significantly higher expression of Sam68 in leukemia, soft tissue sarcoma, medulloblastoma, melanoma and esophageal adeno-carcinoma. Computational tools such as Pathway Commons were utilized to construct the protein-protein network underlying the interaction between sam68 and other intracellular signaling molecules. It is observed that Sam68 is associated with MAPK, TGF- $\beta$  and Wnt signaling pathways. Taken together, Sam68 plays a crucial role which associates signal transduction to alternative splicing events in tumorigenesis.

### **Biography**

Sumithra B is pursuing PhD under the guidance of Dr. Asim Bikas Das in Department of Biotechnology at NIT Warangal, India. Her interest involves molecular signaling pathway of cancer and new effective therapeutics. Currently, her research study is on identifying links between molecular signaling pathways and alternative splicing mechanism in different cancers. She also worked as an ad-hoc faculty in the same Department. Previously she pursued M-Tech in Biotechnology from IIT Guwahati and also has industrial experience from Wockhardt Research Center, Aurangabad, India.

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