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MicroRNAs as novel biomarkers for early diagnosis and prognosis of breast cancer

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OncomiRs are micro-RNAs which are known to be deregulated in various cancers. Since they are highly conserved between the genomes of related species, computational analysis of mi-RNAs would augment the experimental analysis to identify those, which are involved in the regulation of pathway genes leading to the development of cancer. Therefore a user friendly database was constructed for breast cancer which enlists the microRNAs and their respective targets, their interactions, chromosome and gene location of both human and mouse genomes. These microRNAs were validated by expression profiling in 52 individual human breast cancer samples of different grades and stages using two different array platforms, Taqman Low Density Arrays (TLDA) and Locked Nucleic acid Arrays (LNA). Our profile revealed a total of 85% down regulated and rest significantly up-regulated microRNAs. The expression profile indicated that, as breast cancer progressed from stage I to stage III, most of these mi-RNAs were differentially up/down regulated at least within a particular stage or grade. These unique microRNAs were further validated using Taqman individual assays in 250 human breast samples. The potential use of biomarkers in classifying the different stages or grades of cancers could revolutionize the clinical diagnosis and potential therapy.

Biography

Lekha Dinesh Kumar completed two Master's degrees and has obtained her PhD in Molecular biology & Biotechnology at IARI, India. She has joined CCMB in 2001, where she is currently holding a position of Principal Scientist and Project Leader, Cancer Biology. She has received "Vicky Dickinson Memorial Fellowship" of Cardiff University for Post-doctoral research in 2005. She is also the recipient of UICC-ICRETT (International Union against Cancer) fellowship award (2008). Her research focuses on discovery of novel biomarkers for early diagnosis and prognosis of breast cancer and role of WNT deregulators in the initiation and development of colon cancer. She has many international publications and patents to her credit.

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