The roles of miRNAs in cancer

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Abstract:

Different hight throughput assays have been established and used in recent years to study the expression of microRNAs (miRNAs). Such diverse molecular techniques range from custom microarrays to next generation sequencing. We applied some of them to obtain a detailed landscape of microRNA activities in solid cancers and leukemias. In parallel, we also inferred genetic networks from miRNA expression in normal tissues and cancer. To do so we built tissue specific miRNA networks for tumors and leukemias. Cancer networks appeared as built from disjointed subnetworks, as opposed to normal tissues. A comparison of these nets allowed us to identify key miRNA cliques in cancer. We also investigated miRNA copy number alterations and studied the members of miRNA families in relation to their cellular targets. By combining differential expression, genetic networks, and DNA copy number alterations, we confirmed, or discovered, miRNAs with comprehensive roles in human cancer development.