

A **microRNA** (abbreviated **miRNA**) is a small non-coding RNA molecule (containing about 22 nucleotides) found in plants, animals and some viruses, that functions in RNA silencing and post-transcriptional regulation of gene expression. miRNAs function via base-pairing with complementary sequences within mRNA molecules. As a result, these mRNA molecules are silenced, by one or more of the following processes: (1) Cleavage of the mRNA strand into two pieces, (2) Destabilization of the mRNA through shortening of its poly(A) tail, and (3) Less efficient translation of the mRNA into proteins by ribosomes.

miRNAs resemble the small interfering RNAs (siRNAs) of the RNA interference (RNAi) pathway, except miRNAs derive from regions of RNA transcripts that fold back on themselves to form short hairpins, whereas siRNAs derive from longer regions of double-stranded RNA. The human genome may encode over 1900 miRNAs, although more recent analysis indicates that the number is closer to 600.

Use of Micro RNAs:

MicroRNAs (miRNAs) are an evolutionarily conserved class of small, regulatory non-coding RNAs that negatively regulate protein coding gene and other non-coding transcripts expression. miRNAs have been established as master regulators of cellular processes, and they play a vital role in tumor initiation, progression and metastasis. Further, widespread deregulation of microRNAs have been reported in several cancers, with several microRNAs playing oncogenic and tumor suppressive roles. Based on these, miRNAs have emerged as promising therapeutic tools for cancer management. In this review, we have focused on the roles of miRNAs in tumorigenesis, the miRNA-based therapeutic strategies currently being evaluated for use in cancer, and the advantages and current challenges to their use in the clinic.

Gene Silencing by Micro RNAs:

The central dogma in molecular biology says that the genetic information stored as DNA is transcribed into molecules of messenger RNAs, which are then translated into proteins. MicroRNAs are small molecules that do not encode proteins themselves but bind to messenger RNAs that do. They function as locks for messenger RNAs and prevent their translation into proteins,

