MicroRNAs (miRNAs) are small RNA molecules that regulate gene expression post-transcriptionally. After the discovery of the first miRNA in the roundworm Caenorhabditis elegans, these short regulatory RNAs have been found to be an abundant class of RNAs in plants, animals, and DNA viruses. About 3% of human genes encode for miRNAs, and up to 30% of human protein coding genes may be regulated by miRNAs. MicroRNAs play a key role in diverse biological processes, including development, cell proliferation, differentiation, and apoptosis. Accordingly, altered miRNA expression is likely to contribute to human disease, including cancer. This review will summarize the emerging knowledge of the connections between human miRNA biology and different aspects of carcinogenesis. Various techniques available to investigate miRNAs will also be discussed.