MicroRNAs (miRNAs) are ~22nt long single-strand RNA found in all groups of organisms, where they affect biochemical, physiological and behavioral pathways by regulation of protein expression. Regulation of protein expression is mediated by silencing mRNA of target genes in one of two processes, translation repression or degradation of mRNA. Changed expression of miRNA can lead to aberrant regulatory pathways resulting in various pathophysiological conditions like cardiovascular diseases, cancer or neurological disorders. MiRNA can play a role in cancer both as an oncogen or as a tumor suppressor, and it is tissue and cancer-type specific. In colorectal cancer miRNAs downregulate or upregulate signaling pathways including key processes involved in cancer development, like proliferation, cell cycle, apoptosis and metastasis formation. Circadian clock in mammals synchronizes cellular and physiological processes by transcriptional-translational feedback loops. Not only miRNAs regulate the levels of key clock genes and clock controlled genes, but also a number of miRNAs exhibit circadian expression. Therefore aberrant circadian rhythms increase risk of colorectal cancer also by altered expression of miRNAs. The main aim of the thesis was to identify miRNAs, which regulate both tumorigenesis and circadian rhythms. Using data from literature and miRNA databases I identified 37 miRNAs with this characteristic.