

Small RNA pathways represent sequence specific mechanisms regulating gene expression or mediating antiviral defence in eukaryotes. The common feature of these pathways are ~20-30-nucleotide small RNAs, which function as sequence specific guides. Small RNA pathways differ from each other in their roles, biogenesis of small RNAs and mechanism of regulation their targets in different organisms. In mammals, there are three recognized small RNA pathways: RNA interference (RNAi), microRNA (miRNA) and PIWI interacting RNA (piRNA) pathways. Biogenesis of small RNAs of RNAi and miRNA pathways is dependent on the Dicer protein, which generates small interfering RNAs (siRNAs) and miRNAs from long double stranded RNAs (dsRNAs) and small hairpins, respectively. This bachelor thesis provides an insight into structure and function of mammalian Dicer, particularly into differences in Dicer processing of pre-miRNA and siRNA precursors.