1   Summary ENG

Head and neck squamous cell carcinomas are a group of heterogenic tumors arising from epithelial tissue of aerodigestive tract characterized by difficult diagnosis, treatment and prognosis. Alcohol consumption, smoking and high-risk human papillomavirus infection are very well described risk factors of head and neck cancer development. Sinonasal carcinomas are group of malignancies developing in nasal and paranasal sinuses. Oropharyngeal carcinomas are malignancies developing in the throat area downstream to oral cavity.

microRNAs (miRNAs) are short (~23 nucleotides) non-coding RNA molecules participating in regulation of gene expression. Primary function of miRNAs is negative translation regulation as part of RISC (RNA-induced silencing complex) by translational repression and mRNA degradation. miRNAs are involved in various disease pathologies such as neurodegenerative diseases, metabolic disorders and cancer. Moreover, microRNAs have been recognized as key molecules in cancer development and progression in various types of tumors.

My doctoral study research activities were focused on investigation of relative expression of several preselected miRNAs (using real-time PCR) and the relationship between their expression and clinicopathological characteristics of the squamous cell carcinoma and oropharyngeal carcinoma patients. miRNAs of interest for this study were selected based on literary review focused on other types of squamous cell head and neck cancer (sinonasal cancer study) and two high-throughput miRNA expression methods (miRNA microarray and small RNA Next-generation sequencing) in the phase I of the oropharyngeal cancer study. Based on miRNA expression results and statistical analysis, I have concluded that (among others) miR-9 might be the best potential biomarkers for sinonasal squamous cell carcinoma and miR-150-5p (among others) may be the best potential biomarker for oropharyngeal squamous cell carcinoma.