**Abstract**

Despite all the advances in the field of clinical and molecular oncology, the numbers related to the incidence and mortality of colorectal cancer (CRC) remain at unacceptable levels. In recent years, liquid biopsy consisting of circulating biomarkers has come to the forefront of research, offering many advantages over conventional biopsy, such as providing timely information on tumor heterogeneity and the ease of repeated sampling.

This dissertation thesis aimed to identify novel candidate circulating biomarkers from microRNAs, long non-coding RNAs, and cell-free DNA that could be used for earlier diagnosis, better prognosis, or prediction of therapy response of CRC patients and thus further advance personalized medicine.

The main results of this work are: 1) Circulating microRNAs in plasma (miR-122-5p and miR-142-5p) can distinguish patients with rectal cancer and cancer-free individuals and could predict therapy response in patients (both in primary and metastatic CRC patients). 2) Gene amplification of the long non-coding RNA *MALAT1* can represent an important step in the transition of healthy mucosa to adenoma tissue. Plasma *MALAT1* is overexpressed in patients with colorectal adenomas and CRC patients compared to cancer-free individuals and has the potential as a predictive biomarker for CRC patients. 3) Cell-free DNA has the potential to distinguish good and poor responders to chemotherapy and to detect mutations not detected in tumor tissue DNA.

This dissertation proposed several diagnostic, prognostic, and predictive circulating biomarkers for CRC patients. However, to confirm our results and subsequently introduce these biomarkers into clinical practice, further independent studies on larger populations and related mechanistic studies that would describe the biological mechanism in more detail are necessary.