DESCRIPTION FOR THE GENERAL PUBLIC

Prostate cancer is one of the most common malignant tumors in humans; in the United States it is the most common cancer in males, while in Poland it is in the second place. Probably in the future, also in Poland prostate cancer will become the most common cancer in men, because lung cancer will become less common (due to fewer people smoking), and life expectancy will increase (prostate cancer occurs primarily in the elderly). Approximately half of the cases of prostate cancer show the presence of a specific change in the genome, called TMPRSS2: ETS translocation. Probably the carcinomas with this translocation show slightly different behavior.

The prognosis in prostate cancer is very various in different cases. Many patients have small, slow-growing tumors; for these patients aggressive treatment is likely to be unnecessary, while other patients experience metastatic disease and die because of it. Therefore, it is important to search for new factors that determine the prognosis and response to treatment. In case of many tumors we see growing interest in the treatment stimulating the immune system. To try such treatment is necessary to know the details of interaction between the tumor and its surroundings, where there are - among other things - vessels feeding the tumor, inflammatory cells stimulating tumor growth and other immune cells aimed to fight it.

The research project is concerned with a micro RNA (miRNA), within the prostate cancer cell and its surroundings. miRNAs are small nucleic acid molecules that alter the activity of multiple genes, while themselves under the influence of numerous other genes. miRNAs will be extracted from the tissue and the presence of various kinds of miRNAs will be examined by sequencing. The presence of the TMPRSS2: ETS translocation will be determined using *in situ* (on microscopic slide) hybridization. The results of miRNA testing will be compared by statistical methods with the presence of a translocation, tumor size and survival of patients.

The conclusions drawn from the study may help to better tailor the treatment for patient needs and to develop treatment based on immune system stimulation.