GENERAL DESCRIPTION FOR PUBLIC

The statistics show that more and more people suffer from and die for tumors every year. When tumor disease spreads to other organs and metastasis is formed, usually no treatment is successful. The vast majority of patients with metastases die. In order to treat patients in the best possible way and avoid progression of the disease, it is very important to know as much about the tumor as possible already at the time of its diagnosis. It is good to reveal details of individual patient's tumor and based on this information adjust treatment for this particular patient. To do so, we need the knowledge about complex processes taking place in tumor cells and observations which elements of these processes might be a mark informing e.g. about the aggressiveness of a tumor or what are the chances for the patient to survive. Such signatures called (bio)markers or their combinations might be later used also to personalize patients' therapy. In practice it is already well functioning in case of breast cancer where patients receive different treatment depending on the biological characteristics of their tumor – type I breast cancer receives treatment A, type II – treatment B, etc.

The proposed project will aim to seek for such possibly informative biological marks in prostate cancer. In men, prostate cancer is one of the most frequent cancer type. Although most of the patients respond to the treatment, still ca. 30% of patients progress and ca. 6% die due to disease. Already existing test (measuring concentration of a protein called PSA in the men's blood) enables diagnostics and monitoring of the disease. However, not all patients will profit from this test. Some of them will have 'normal' test outcome but will progress and die. Therefore, it is important to search for further biological marks of prostate cancer defining its stage of advancement.

In this project I want to check if keratins, proteins which are present in normal cells of prostate might help us to understand this 'hierarchy of disease' a bit better. There are ca. 30 different keratins. All of them are involved in inner 'scaffold' of normal cells and some may 'disappear' under specific conditions. I want to prove if depending on the presence and/or absence of some selected keratins I can create a system of prostate cancer four subtypes reflecting the stage of the disease and patient's prognosis. I want also to check if one of these subtypes is more prone to metastasize and what are further biological characteristics of each subtype.

This project should ground the knowledge if keratins are utile in prostate cancer stratification and help to understand prostate cancer biology.