DESCRIPTION FOR THE GENERAL PUBLIC

Nearly one million girls and women in their reproductive age are annually diagnosed with cancer and the age of oncological patients is constantly decreasing. Fortunately during past years, the efficiency of oncological treatment has been significantly improved. This results in a longer life of patients as well as in considerable improvement of their life quality after cancer. However, the standard oncological treatment (chemotherapy, radiotherapy) may diminish reproductive potential of patients or result in infertility. The issue may seem insignificant, in the face of death's threat, but after successful treatment, the inability to fulfill the dream of motherhood may be a life drama. In women, chemo- or radiotherapy may lead to a decrease in the number of oocytes and hormonal disorders. The major side effects of oncological treatment in women are problems with conception and maintenance of gestation, premature menopause and permanent infertility. The possibility of fertility preservation in women treated for cancer is scarce. To date, the only method giving women a chance for motherhood is cryopreservation of embryos. However, this method is invasive and cause delay in the cancer therapy. It also cannot be used in pre-pubertal patients and, most importantly, does not protect ovarian function. In view of these arguments it is crucial to develop an efficient strategy for fertility preservation in oncological patients. Recently, tamoxifen (TAM) became a new, promising tool in the protection of ovarian function. TAM is an organic compound, which in living organism binds to estrogen receptors, and elicits estrogen agonist or antagonist responses in a tissue specific manner. In mammary glands, TAM acts as estrogen antagonist, and therefore for 30 years served as a standard in therapy of estrogen-positive cancers. Due to the fact, that the protective mechanism of TAM is unknown, the aim of the current project is to identify molecules involved in the mechanism of TAM action in the ovary of tumor-bearing rats and to elucidate whether TAM supplementation does not interfere with therapeutic performance of chemotherapeutics. High-throughput technologies planned to be used in the project (next generation sequencing, two-dimensional differential in gel electrophoresis coupled with mass spectrometry) will allow to perform a complex analysis of changes in the rat ovary on both transcriptome and proteome level. Additionally, we will analyze the number of oocytes, hormones levels and tumor development stadium. Identifying genes and proteins crucial for TAM action in the ovary may inspire future researchers towards finding new, efficient strategies for women fertility preservation during cancer treatment.