Immunotherapy is the latest oncological achievement of medicine in the fight against many types of cancer. Depends on use of own proteins and cells of the body to fight the cancer cells.

For many years it was thought that the tumor is composed only of the tumor cells. With the increasing development of science now we know that the mass of the tumor consists of a number of cells associated with cancer cells. Many of them are directly responsible for killing them. However, cancer cells develop a number of mechanisms to outwit the immune cells and over time they become unrecognizable to them. Moreover, they begin to use immune cells for their own purposes, e.g. searching for new niches in other organs of the patient, what leads to the process of metastasis. These discoveries have led scientists to try to edit or repair mechanisms in cells of the immune system to again become able to fight the cancer cells. In my research focuses its attention on the body's own protein which is lambda interferon (IFN-λ). Interferons have long been known as the modulators of the immune response used in the treatment of viral diseases. IFNs stimulate immune cells to take even more effective action in the fight against the disease. This is particularly important in chronic diseases, which greatly weakens the immune response e.g. HIV, hepatitis B, but also in diseases of childhood-varicella.

IFN-λ is such a protein, whose role in viral diseases has already been largely described, but there were a few so far, describing the work as its potential as editor of antitumor immune response. Our project focuses on IFN-λ. Conducted research will answer the question: what kind of role IFN-λ has in modulating anti-tumor response in canine mammary cancer, which is a model for breast cancer in women. Therefore, the knowledge gained in the project will serve not only the development of veterinary medicine, but it will be a building block in the development of the experimental oncology and contribute to a better understanding of the biology of breast cancer.

Use your own body protein in the fight against cancer brings hope to eliminate the widespread use of chemotherapy and radiation, which pose a very serious side effects, often speeding up the death of the patient oncology.