In the last 15 years we can observe many clinical studies which focus on recovery of immune reaction against tumor cells and possibly tumor elimination. At first it is necessary to understand the interaction of immune system with tumor cells so that effective vaccines are developed. In the first part of this work, I focus on the preparation of dendritic cell
vaccine for patients with ovarian and prostate cancer. We show that dendritic cells can be differentiated from peripheral mononuclear cells in both tumors in vitro, we were able to pulse dendritic cells with apoptotic tumor cell, in case of ovarian cancer with autologous tumor cells, in case of prostate cancer with prostate cancer cell lines LNCaP and DU145.
Pulsed mature dendritic cells expressed maturation marker CD83, costimulatory molecules CD80 a CD86 and produced significant cytokines. These dendritic cells also induced specific T lymphocyte response. In the next part of the work we focused on practical aspects of preparation of dendritic cell vaccine in the patient with prostate cancer and optimization
of preparation in GMP conditions. The best medium for cultivation turned out to be Cell Gro. Maturation of dendritic cell with poly I:C led to the highest proliferation of specific T lymphocytes and at the same time to the lowest proliferation of regulatory T lymphocytes. We administered the vaccine in a patient with metastatic prostate cancer and followed the
clinical and immunological response. In the last part of the work we studied the dendritic cells, neutrophils and regulatory T lymphocytes in the blood and tumor infiltrate of patients with clear cell renal carcinoma and correlated the results with clinical stage. We found higher numbers of neutrophils and regulatory T lymphocytes in the peripheral blood of renal cancer patients than in healthy controls.