Description for the general public:

In our project we aim to identify genes and molecules which contribute to development and progression of kidney cancer. We focus on the most common subtype of kidney cancer, called clear cell renal cell carcinoma (ccRCC). In Poland, ccRCC affects about 5000 citizens annually, leading to death of half of them. High mortality of ccRCC is caused mainly by frequent metastasis. ccRCC can be efficiently treated when its localisation is limited to the kidney. However, when metastasis appears, treatment is very difficult.

In our project we hypothesize that growth and metastatic spread of ccRCC tumors is helped by non-cancer cells called mesenchymal stem (or stromal) cells (MSC). These cells reside in different parts of human body and in normal situation they help in healing of injuries. However, when tumor appears, MSC can be recruited to its location and assist cancer cells to further growth and dissemination throughout the body. We hypothesize that ccRCC cells secrete molecules that stimulate MSC to migrate towards tumor. We also hope that blocking of these molecules can lead to inhibition of tumor growth and progression.

To carry out our project we will use tissue samples derived from ccRCC patients, ccRCC cell lines cultured in vitro, as well as a mouse model of ccRCC.

The final result of our project will be new knowledge that will allow to better understand how cancer develops in the kidney. We hope, that our results will create basis for future studies aiming in development new strategies for treatment of ccRCC patients, as well as for implementation of new molecular markers of cancer progression.