

According to the World Health Organization (WHO), 8.2 million people died from cancer in 2012, making it one of the leading causes of morbidity and mortality worldwide. Most of the compounds tested for anticancer properties act as cytotoxic agents and their activity is focused on influencing primary tumors. However, the biggest problem in the treatment of cancer is the development of metastases. It is estimated that over 90% of deaths due to cancer are associated with metastases. So far, there is no available drug that is effective in inhibition of metastasis formation. Currently the only means to prevent metastasis is the removal of the original primary cancer. It remains extremely challenging to treat metastatic cancer and the anti-metastasis therapies are drastically different for each individual cancer. It is believed that an essential precondition for successful clinical development requires targeting the correct portions of the metastatic cascade. The treatment of existing metastases is subject to numerous variables which might be considered in design of new drugs.

The aim of this project is to investigate anti-metastatic properties of a series of polypyridyl ruthenium complexes by *in vitro* evaluation. The studies will be carried out on various cancer (melanoma, breast cancer) and endothelial cells. Anti-metastatic properties will be assessed by monitoring how the studied compounds modify the tumor microenvironment in terms of the adhesion, migration and invasion properties. Information gained from the planned *in vitro* studies will allow for a rational selection of compounds with the best anti-metastatic potential for further *in vivo* studies.