

Description for the general public

Lung and colon cancers are among the most common tumors in Poland. Kidney cancers are less common, however due to late-stage diagnosis is one of the most lethal malignancies. Therefore, it is extremely important to understand the molecular mechanisms associated with tumor progression and process of disease recurrence. Notch pathway is evolutionarily conserved mechanism that plays a key role in development of multicellular organisms through cell fate determination and regulation of various processes including cell proliferation and differentiation as well as angiogenesis. According to this fact it is not surprising that deregulation of Notch pathway signaling contributes to initiation and progression of tumorigenesis. Our preliminary study based on bioinformatics analyses of the risk of disease recurrence depending on the level of the Notch genes expression confirmed the assumption of many other researches that Notch pathway can act as tumor suppressor or oncogene depending on tissue context and expression of particular receptors and ligands. Additionally, based on *in silico* analysis we are able to determine the biological differences among groups of favourable and unfavourable prognosis of disease recurrence. Therefore, this project assumes deepening our knowledge regarding biological processes regulated by Notch pathway and contributing to relapse of selected tumors: lung adenocarcinoma, lung squamous cell carcinoma and colon adenocarcinoma, kidney renal clear cell carcinoma, kidney renal papillary cell carcinoma and kidney chromophobe.