Primary vasculitides belong to the group of rare diseases (aprox. 15/1 million); the most dreadful belong to the group associated with anti-neutrophil cytoplasmatic antibodies (ANCA). If not treated they are fatal in 80% of patients within a year. This group consist of: granulomatosis with polyangiitis (formerly Wegeners'), microscopic polyangiitis, and eosinophilic granulomatosis with polyangiitis (formerly Churg-Strauss). Inflammation in the vessel wall leads to injury and necrosis of tissues and organs. In ANCA-associated vasculitides the most frequently involved organs are lungs and kidneys. Etiology, mechanisms behind the disease and optimal methods of treatment are largely unknown, mainly due to the rarity of those diseases. Their diagnosis is difficult and often retarded which may irreversibly damage vital organs (lung fibrosis, end-stage renal disease). It may lead to disability and death. For this knowledge about mechanisms of pathologic processes, prompt diagnosis and treatment are so important.

Results of the proposed research grant should bring new knowledge about processes which take place on transcriptome level of single cells (molecular biology). Comparing healthy people with patients we should learn about abnormal production of various proteins in white blood cells and nucleic acids released to the blood stream and associate these abnormalities with type, stage and activity of the disease. It will broaden our knowledge about pathological processes working behind ANCA-associated vasculitides. In the future it should allow us to elaborate new and precise methods of diagnosis and treatment of those diseases, and maybe to individualize the treatment to the needs of a particular patient. Our research will be facilitated bcause we have information about more than 600 such patients in the frame of the POLVAS Scientific Consortium (national register) with Jagiellonian University Medical College as its leader.