

DESCRIPTION FOR THE GENERAL PUBLIC

Ulcerative colitis (UC) and colitis-associated colorectal cancer (CAC) are the most frequently diagnosed disease entities of the digestive system. It is suggested that environmental factors as well as changes within the microbiome and/or transcriptome which lead to intestinal homeostasis disorders and immune response deregulation are involved in the pathogenesis of UC and CAC. Despite intensive studies, the causes of UC and CAC are poorly understood and treatment of UC and CAC is based primarily on maintaining long-term remission of the disease.

Our preliminary research conducted in search for factors involved in the development of UC and CAC revealed deregulation of the adhesion G protein-coupled receptor F5 (ADGRF5) in UC and CAC. The subject of the research will be to assess the clinical significance of ADGRF5 expression, as well as to determine ADGRF5 contribution in the regulation of immune response, tight junction integrity and intestinal wall permeability in UC and CAC.

As part of the planned project, ADGRF5 levels analysis will be performed in samples taken from patients with UC and CAC. Studies on animal models of UC and CAC with *ADGRF5* gene knockout will allow to evaluate the influence of ADGRF5-dependent signaling. When looking for mechanisms responsible for the progression of UC and CAC, the analysis of immune cells infiltration will be conducted along with *in vitro* studies which allow to determine the role of ADGRF5 in the regulation of immune response. Using organoids, cytokines and chemokines analysis as well as co-immunoprecipitation and immunocytochemistry we will be able to answer the question whether ADGRF5 affects the tight junction integrity and intestinal wall permeability in UC and CAC.

Planned studies will allow a better understanding of the pathogenesis of UC and CAC and in the future may contribute to the development of new, more effective therapies.