

Inflammatory Bowel Disease (IBD, MIM # 266600) is a group of chronic and recurrent inflammatory diseases of unknown etiology, affecting the digestive tract. IBD primarily includes ulcerative colitis and Crohn's disease. Epidemiological data indicate a significant increasing in the incidence of these conditions, especially in highly developed countries. Frequency varies from 100 to 300 per 100 000 in Western European populations. At present, it is not possible to cure the IBD and the main aim of antiinflammatory and immunosupresant-based therapy is to achieve and maintain remission.

Use of thiopurines in a large proportion of patients causes the range of adverse drug reactions, in some cases accompanied by lack of therapeutic effect. The current state of knowledge on the thiopurine metabolism is not sufficient to fully predict the occurrence of undesirable side effects. Therefore, there is still a need for searching of new predictive markers, allowing optimization of the treatment with tiopurine drugs, which are widely used not only in inflammatory bowel diseases, but also in transplantology as well as other inflammatory conditions.

Various aspects of the influence of environmental factors on organisms have been described so far. In the project we plan to demonstrate the interaction of a permanent long-term exposure to thiopurine-based therapy, with the genome. The assumed studies will determine how the exposure to thiopurines affect the methylation process, and consequently, how it changes the gene expression profile. Finally, the results obtained will allow to find whether long-term intake of thiopurines modifies the genome and how it affects the metabolism of these drugs, which might be helpful in developing new therapeutic schemes of thiopurine-based therapy. This will improve patients' treatment outcomes and will help to minimize the damage done by the drugs.