Description for the general public

During the last few year a novel therapeutic approach for oncological patients emerged – immunotherapy, based on development of immune system cells able to destroy cancer cells. Expectations regarding such therapeutic approach are especially associated with its possible application in case of tumor types that are almost incurable, including glioblastoma. This type of therapy may be used in case of cancer cells that express specific protein on their surface that is absent on the surface of normal cells. First aim of the project is an attempt to answer the question whether one of such cancer-specific proteins is properly described by biologists. Preliminary analyses conducted by the project team indicate that it is not the case. Therefore, immune system cells aimed to destroy cancer cells have been probably improperly developed so far. If authors of the project are correct, than project results will contribute not only to development of such therapy in a proper way, by also may lead to development of diagnostic tools (antibodies), specifically recognizing cancer cells. It will facilitate diagnostics of such tumors and may lead to the progress in further research regarding their biology.

Second aim of the project is associated with the fact that not all glioblastoma cells express on their surface cancer-specific proteins that can be recognized by the immune system cells. Therefore, the question remains what impact will elimination of cells characterized by the presence of this specific protein, by properly developed immunotherapy, have on cancer. Project team assumes that it may not be necessarily associated with the failure of such immunotherapeutic approach, as cells without cancer-specific protein may be dependent on mutant protein-positive cells. Obviously, it should be considered that such a relationship may not present in tumor, and, therefore, mutant protein-negative cells will be able to function independently. It should be also considered that even if mutant protein-negative population is indeed dependent on mutant protein-positive population, it may quickly become independent. Such scenarios will be analyzed during project course. If these structure-negative cells turn out to be independent from structure-positive ones, it will mean that other therapeutic methods are needed to be developed. Still, part of research focused on immune cells destroying cancer cells may be helpful to broaden the scientific knowledge and improve patients condition, as during analyses of cancer-specific structures other therapeutic and diagnostic tools (such as antibodies) may be developed.