“Dipeptidyl peptidase IV Activity and/or Structure Homologues“ (DASH) represent a newly defined group of multifunctional molecules, typically bearing dipeptidyl peptidase IV-like hydrolytic activity. Dipeptidyl peptidase IV (DPPIV, EC 3.4.14.5, identical to CD26) cleaves out X-Pro dipeptides from the N-terminus of peptides. Recent knowledge shows substantial role of DASH in cancer pathogenesis.

Here we present (i) an overview of the issue of DASH molecules and their functional substrates in the neuroectodermal tumor and (ii) a preparation of stable transfected human glioblastoma cell lines with inducible gene expression of DPPIV. Vectors containing human DPPIV gene and its mutated form in the catalytic active site have been prepared to assess the importance of the enzymatic activity of the final product. This will enable us to study the biological role of DPPIV in genesis and progression of neuroectodermal tumors – cells growth, invasion and migration of transformed glial cells in vitro. Moreover, complex role of DPPIV will be studied using a model of homotopic application of transfected cells into the brain of immunodeficient mice.

Prepared cell lines provide more consistent information about DPPIV from the point of view of its „autocrine“ importance for the expressing cells, as well as its potential „paracrine“ effect „on other insiders/bystanders“ within the tumor.