

## 2 Summary

During history, viruses have been mostly studied for their ability to cause diseases. However, in the past few years it has become apparent that some characteristics of viruses, which normally contribute to disease, may be manipulated to treat disease rather than cause it. Thus viruses are being developed as vectors for vaccine construction, as gene therapy agents, and as cancer therapy agents. Besides of well know adenovirus and retrovirus vectors, another useful virus candidate is vaccinia virus (VV). Recently several studies have shown that recombinant VV expressing different TAA is able to induce immune response with an anti-tumour effect in mouse model system.

The Laboratory of the Experimental Virology in Institute of Haematology and Blood Transfusion (UHKT) is focused on developing DNA and viral vaccines against tumours induced by Human Papillomavirus 16 (HPV16). The recombinant viruses containing HPV 16 E7 gene are used for an immune response inducing. The convenient gene such as a gene for cytokine or another co-stimulation molecule which is inserted into VV in addition to the E7 gene can increase the immune response. One of these genes which can be used for its expected adjuvant effect is the gene for receptor type II for Tumour Growth Factor  $\beta$  (T $\beta$ RII). It is generally known that the soluble form of this receptor (sT $\beta$ RII) is able to bind and so decrease a concentration of active cytokine Tumour Growth Factor  $\beta$  (TGF $\beta$ ). The TGF $\beta$  is considered to be an important actor in tumour biology due to its immunosuppressive properties.