Conclusions

- We constructed the vaccines carrying HPV-16 E7 antigen based on *B. pertussis* CyaA toxin
- We introduced ELISPOT and MHC-1 tetramer assays for testing of cell-mediated immune response in the mouse model
- We tested cell-mediated immune response following immunization with different kinds of the vaccines carrying the modified HPV-16 E7 antigen:
    - Recombinant adenylate cyclase toxoid CyaA336/E7 is able to induce E7 specific $CD8^+$ cellular immune response in mice and protect them against TC-1 tumor growth
    - Some DNA vaccines carrying the E7 gene fused to another gene are able to induce better anti-tumor immune response than non-modified E7 gene in mice (DNA vaccines evaluated according to the magnitude of CTL response induced: E7GGG.GUS > E7GGGHSP, E7HSP >> CP-E7 > E7)
    - Fusion of E7 with VV hemagglutinin leads to cell-surface expression of E7 and following vaccination with VV-E7-HA it induces Th-2 polarized immune response type along with the absence of anti-tumor Th-1 response
    - Co-expression of IL-12 from double recombinant vaccinia virus (VV-IL-12-Sig/E7/LAMP) reduces $CD8^+$ cellular immunity induced by Sig/E7/LAMP
    - Immunization with dendritic cells transduced by rVV improves the efficacy of rVV vaccination
    - Combined immunization increases vaccination effectiveness (CyaA336/E7+MVA-Sig/E7/LAMP, DNA-SigE7GGG/LAMP+cellular vaccine)