Abstract

The topic of this thesis are the interactions of polyomavirus structures with components of innate immunity in infected cells. This review is focused on model SV40 and MPyV polyomaviruses and human BKPyV, JCPyV and MCPyV. The research of the interplay of innate immunity response and polyomaviruses is in its infancy. Infection with all studied polyomaviruses induces, via their LT antigens, DNA damage response (DDR), necessary for their efficient replication. DDR can activate both the canonical and the non-canonical pathway of interferon induction leading to an antiviral state. Polyomaviruses are recognized by the immune system first during replication of their genomes. Interferon induction by polyomaviruses can be initiated by the DNA sensor, cGAS, followed by STING activation, but also by recognition of the viral RNA by the RIG-1 sensor. The virus early LT and st antigens and the late agnoprotein of some polyomaviruses have demonstrated the potential to regulate innate immune responses and thus contribute to the establishment of polyomavirus persistence.

Keywords: polyomaviruses, innate cell immunity, large T antigen, small t antigen, agnoprotein, interferon-stimulated genes