

Abstract

Giant viruses are a group of viruses with genome composed of double-stranded DNA molecule. They are characterized by the creation of giant viral particles, the size of which varies between 150–1500 nm. Also, their genomes are huge reaching sizes of up to 2,5 Mbp. The viruses replicate either in the cytoplasm or they exploit for their replication both nucleus and cytoplasm. Therefore, they are called, nucleocytoplasmic large DNA viruses (NCLDVs). During their replication cycle, the giant viruses induce the creation of viral factories, which provide morphogenesis of new virions. The aim of this thesis is to summarise current knowledge of selected representatives of the giant viruses, and to describe their replication strategies. Furthermore, this work aims to discuss discoveries made in relation to this particular group of viruses. Thanks to the discovery of giant viruses, another group of small viruses was identified – the so-called virophages (viruses of viruses). Virophages have the ability to take advantage of the giant virus infecting an amoeba to realize their own replication strategy. In some members of the Mimiviridae family there was described a presence of an genome element providing a unique way of immunoprotection of giant viruses from being infected by the *Zamilon* virophage.

Key words: giant viruses, Mimivirus, virophage, MIMIVIRE, amoeba