

Gene expression of Bastille-like phages: the key to their potential applications

Bacteriophages (viruses that infect bacteria) has long been proposed as an alternative to antibiotics. Our group is particularly interested in the newly discovered group of phages called “the Bastille group”. These viruses infect gram-positive bacilli so they arouse a lot of interest as a potential therapeutic agents against *Bacillus cereus* (bacterium causing food poisoning) and *Bacillus anthracis* (causative agent of anthrax).

Our project aims to understand the mechanisms coordinating activity of phage genes inside the host cell. Step by step, we will find out which genes are turned on at the beginning of infection, and which are activated later, shortly before the death of the host. Our main goal is to understand how does the virus "know" when to activate (or inactivate) its genes and how it processes genetic information to produce proteins.

We suspect that the mechanisms controlling the course of the infection may be connected with the synthesis and processing of the RNA molecules. We have good reasons to believe that studying the Bastille group phages we may find new regulatory RNAs and unusual varieties of introns (fragments of RNA molecules that have to be cut-out during its maturation).

To sum up, we are convinced that once we understand how the phage genes work, the application of the Bastille group phages in the treatment of bacterial infection will become easier. Moreover, the knowledge gathered during the project will broaden our understanding of diversity, structure, and functioning of viral and bacterial genes.