The occurrence of bacteria resistant to all known antibiotics brings us back to the pre-antibiotic era. Due to this, new forms of therapy are urgently investigated. One of potential treatment of resistant bacteria is the bacteriophage therapy, based on the fact that bacteriophages are natural enemies of bacteria. Such therapies are being yet investigated in the beginning of XX-th century. Conventional phage therapy relies on the use of naturally-occurring phages to infect and lyse bacteria at the site of infection. Biotechnological advances have further expanded the repertoire of potential phage therapeutics to include new strategies using bioengineered phages or purified phage lytic proteins. The cycle of propagation of the double-stranded DNA phages includes the stage of attachment of phage to the host bacterial cell and the injection of its genome into the interior thanks to depolymerases acting on external structures of bacteria and the stage of liberation of the new phage particles by lysis of host cells. Lysis is driven by viral proteins: holins and endolysins that destroy cellular membrane and peptidoglycan. These enzymes may act alone or in synergy with antibiotics to kill the bacteria.

Neisseria gonorrhoeae is responsible for the second most communicable sexually transmitted disease but the gonorrhea, may become incurable in the very near future, due to the rapid increase of antibiotic resistance.

The main hypothesis of the proposal is that phage-derived therapy might be an alternative or a supportive medical procedure for the treatment of incurable gonorrhea and that we can obtain bacteriophage-derived tools, i.e. lytic proteins or active phages, able to affect the viability of gonococci. The main problem is that no phage specific for *N. gonorrhoeae* is known. We plan to screen environmental samples for such bacteriophage as well as use the therapeutic potential of lytic enzymes encoded by prophages found in the gonococcal genome.