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PROVA DE CONHECIMENTOS DE LÍNGUA INGLESA

Número de Inscrição: _____ Assinatura: _____

INTRUÇÕES

- 1) As questões da prova deverão ser respondidas à caneta, cor azul ou preta, exclusivamente nas folhas de respostas fornecidas pela comissão de seleção.
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- BOA PROVA!

Scientists Identify a Viral Communication System: A team finds that viruses can sense chemical signals and use them to decide whether to kill or infect their hosts.

By Joshua A. Krisch for The scientist, on January 20th, 2017

The viruses that attack *Bacillus subtilis* may decide whether to kill or simply infect their hosts through quorum sensing, according to study published this week (January 18) in *Nature*. Researchers isolated the peptide that the viruses appear to be using to communicate, and named it “arbitrium.” If confirmed, the results of the study would be the first description of a molecular communication system between viruses, and potentially open the door to therapies that target the viral communication system.

“The molecule we discovered enables each generation of viruses to communicate with successive generations by adding to concentrations of the arbitrium molecule,” coauthor Rotem Sorek of the Weizmann Institute of Science in Rehovot, Israel, said in a statement. “Each virus can then ‘count’ how many previous viruses have succeeded in infecting host cells and thus decide which strategy is best at any point in time.”

Sorek and colleagues were investigating the molecular communication system that *Bacillus subtilis* use to alert other bacteria to viruses when they discovered that one particular bacteriophage, known as *phi3T*, produces the arbitrium peptide. They found that this peptide appears to influence whether bacteriophages pursue the lytic cycle—multiplying until the host bacterium bursts and dies—or the lysogenic cycle—inserting their genetic material into the host and lying dormant before eventually attacking the cell.

To test their theory, Sorek and colleagues injected *phi3T* into a flask of *B. subtilis* and confirmed that the viruses killed the bacteria via the lytic cycle. The researchers then filtered the flask so that only the peptides remained, and added it to a fresh batch of bacteria and phages. This time, many of the viruses infected the bacteria and went dormant, following the lysogenic cycle. The findings suggest that this peptide, released by active bacteriophages, influences whether future bacteriophages will choose to kill their hosts immediately or go dormant within their hosts’ genomes.

The study is “annoyingly good,” Martha Cloike of the University of Leicester, U.K., who was not involved in the study, told *Nature*. “This is going to be one of those transformative papers.” She even wondered whether viruses that infect more complex organisms, such as people, could talk to one another. HIV and herpes viruses can cause both active and latent infections, she noted. “If you had a molecule that could drive viruses into complete latency, it would be a good drug for alternative therapy.”

Original article: “Communication between viruses guides lysis–lysogeny decisions”

Erez *et al.* *Nature*, Jan 2017, vol 541: 488. doi:10.1038/nature21049

