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Mini Research Article

# The Single Biggest Threat to Man´S Continued Dominance on the Planet is the Virus

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## Abstract

There is evidence that viruses have always been with us and perhaps even before that.

Their characteristics have been spectacularly described since Wendell Stanley was able to crystallize them in 1935. They have subsequently been microphotographed and are currently being studied and detected thanks to the brilliant mind of Kary Mullis: Polymerase Chain Reaction (PCR) and its variants.

Today, humanity is in check, as the movie Outbreak (1995) supposes, due to one of the existing viruses (SARS-CoV-2), but others that have been "eradicated" according to the WHO must not be forgotten. Hence, Joshua Lederberg's sentence that titles this article and that will disturb the domain of man on the face of the Earth.

**Keywords:** Virus; Threat; Dominance; WHO; Mutations

## Introduction

Joshua Lederberg was an American molecular biologist known for his work in microbial genetics, artificial intelligence, and the United States space program. He was 33 years old when he won the 1958 Nobel Prize in Physiology or Medicine for discovering that bacteria can exchange genes (bacterial conjugation) [1].

However, the sentence that serves as the title of this work is his own and was considered part of the movie OUTBREAK in 1995, when he was still alive. The sentence is disturbing knowing that one of the paradoxes of medicine today is that the simplest of organisms is the most difficult to control, because while great advances were made in controlling complex organisms such as bacteria, with hundreds of different antibiotics, currently there are only a few proven antiviral drugs.

Treatment against viruses is still elusive, although any attempt must consider their structure and the special way they generate offspring. The origin of viruses is in constant discussion, but there are indications that they were already present in ancient times (Egypt 2000 BC) at least.

Human activity has probably allowed our intrusion into spaces where viruses are endemic in the existing native or animal population. However, the opposite has also happened, since the arrival of the Spanish in America more than 500 years ago, allowed viruses to also be colonizers of a new continent: pox virus, for example.

## Material and methods

Virus are virus said André Lwoff, winner of the Nobel Prize in 1965 [1], probably in response to a definition of a virus. Viruses are special in their progeny formation, as they do not follow the common strategy of microorganisms: binary fission. In addition, the enzymes that allow the duplication of its genome (RNA or DNA, never both) are not 100% reliable regarding the genetic material to

be duplicated, which accounts for many changes in the nucleotide sequence, some of which are beneficial for the pathogen and that we currently suffer with variants of SARS-CoV-2, for example.

These changes in the genome have been initially detected with the use of restriction enzymes after the amplification of a DNA fragment thanks to PCR and currently by means of nucleotide sequencing of the amplified fragment. The use of some computer programs has allowed the alignment of sequences (Clustal Omega, for example) and others such as BLAST or Oligoperfect Design have contributed their own in terms of nucleotide identity or the use of optimal primers for the generation of the desired fragment [2-4].

Viruses are viruses and viruses have crossed the species barrier, being several zoonotic, such as the rabies virus (RNA) and among animals one of the most representative would correspond to the Canine Distemper Virus (RNA), which originally affected canids and which today is known to affect several other families, including big cats and seals. SARS-CoV-2 is an RNA virus and the monkeypox virus is a DNA virus, as can be seen, mutations occur more frequently in an RNA virus and we have suffered from this since ancient times [5,6].

## Results and Discussion

### Viruses are viruses

The brilliant idea of Kary Mullis [1,7] has made it possible to detect both SARS-CoV-2 by means of some variation of the original method (RT-PCR) that introduces a previous step of cDNA synthesis from the original RNA of the virus, as well as to detect the virus of the monkey pox. The method devised by Mullis subsequently allows sequencing of the amplified fragment, to design optimal primers for new variants, if necessary. Today there is a database recognized worldwide (Genbank®), in which the sequences reported around the world are stored, both for viruses that affect animals as well as the human species [8-10].

Indeed, the title of this work disturbs. However, it could be changed in our favor when looking at a phenomenon on the rise: antimicrobial resistance. Without a doubt, the existence of bacteriophages ("viruses that eat bacteria") could be a new trench against infectious diseases caused by bacteria.

## Conclusion

Without a doubt, Joshua Lederberg's phrase is true and disturbing. It will be our mission to see how to modify it and make it a definitive ally, because we stand on the shoulders of giants.

## Acknowledgments

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## Bibliography

1. The Nobel Prize. Nobelprize.org © (2022).
2. Clustal Omega. Multiple Sequence Alignment (2022).
3. BLAST. Basic Local Alignment Search Tool (2022).
4. Oligo Perfect Design. Invitrogen ® (2022).
5. Fenner´s Veterinary Virology. Copyright © 2016 Elsevier Inc. (2022).
6. ICTV. International Committee of Taxonomy on Viruses. ICTV © (2022).
7. Mullis K and Faloona F. "Specific synthesis of DNA *in vitro* via a polymerase catalyzed chain reaction". *Methods in Enzymology* 155 (1987): 335-350.
8. Vargas M., *et al*. "Use of primer design to detect the Glycoprotein C gene of Canine Herpes Virus by Polymerase Chain Reaction". *Acta Scientific Veterinary Sciences* (2022).
9. Salas V., *et al*. "Phylogenetic analysis of canine distemper virus detected in Chile". *International Journal of Current Research* 1.8 (2018): 72402-72407.
10. Cisternas F., *et al*. "Feline calicivirus. Molecular detection with primers design". *EC Veterinary Science* 5.7 (2020): 54-72.