

What computer programs can be used to detect a viral pathogen?

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Abstract

Current virology uses biotools from some internet platforms that are still free of charge. This has allowed virology -like other medical disciplines- to take a quantum leap towards the detection and diagnosis of viral pathogens in conjunction with the brilliant idea developed by Kary Mullis.

Not forgetting André Lwoff: *Viruses are viruses*, the detection of a virus does not differ even if it affects humans or another species: One Health.

Keywords: Viral detection; Biotools; On line softwares; Primer design

1 Introduction

A particularity of viruses is their genome (RNA or DNA), which differs in size, length, or nucleotide sequence. Currently, these sequences have been published by several authors and are stored in a database: the Genbank® [1]. This, along with various computer programs, allows both the determination of the identity of a suspected agent and the design of primers for a polymerase chain reaction (PCR) devised by Kary Mullis. Other methodologies involving platforms such as Clustal Omega and BLAST should not be left out of mention.

Thus, there are no pretexts for detecting a pathogen whose genome is DNA or RNA.

Finally, both teachers and students can access these internet platforms and enter the fantastic world of molecular virology...!!!!

2 Material and methods

A virology laboratory requires cell culture, however, the virus isolation method is tedious and time consuming. Due to the above, several methodologies have been developed that, by involving the brilliant idea of Kary Mullis [2], called Polymerase Chain Reaction in conjunction with 2% agarose gel electrophoresis, allows the observation of the amplification of a DNA fragment (conventional PCR).

Subsequently, the nucleotide sequence of the amplified fragment can be known and, thanks to the use of free access online programs such as CLUSTAL Omega [3] and BLAST [4], the identity of the suspected agent can finally be corroborated.

If, when consulting the existing scientific literature, there are no specific primers for a PCR reaction, they can be designed thanks to the Invitrogen® Oligoperfect program or another similar one. This is why both A.Lwoff's statement

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and the fact that there is no pretext for proposing a pathogen detection protocol is corroborated. In relation to the necessary samples, these can originate from organs or fluids to extract the nucleic acid

3 Discussion

Although the gold standard in virology is the isolation of the viral agent, the indicated methodologies allow the detection of the viral agent in less time. Scientific innovations or brilliant ideas such as Kary Mullis's are combined today with biotools that are still freely accessible online such as Clustal, BLAST and others that have been used in publications in mainstream journals [5, 6, 7, 8] as well as in others that have exalted the molecular study of pathogens of veterinary interest [9-17].

4 Conclusion

Teaching also does science. In our country and thanks to ideas that involve the detection of viral pathogens, at least 35 title memories have been developed that involve same number of new veterinarians. These former students today could perfectly develop the detection and diagnosis of a viral pathogen.

Compliance with ethical standards

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