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Recombinant Flaviviruses Generation using Circular Polymerase Extension Reaction

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INTRODUCTION

The study and manipulation of viruses are essential for understanding their biology, pathogenesis, and developing countermeasures. The development of efficient methods to generate recombinant viruses is crucial for these research efforts. One such technique, Circular Polymerase Extension Reaction (CPER), has emerged as a powerful tool for the rapid generation of recombinant flaviviruses. This article explores the principles, advantages, and applications of CPER in the field of virology. CPER is a technique used to generate recombinant DNA molecules by amplifying a circular DNA template using a DNA polymerase with strand displacement activity. The process involves the use of two primers, one specific to the circular template and the other complementary to the desired DNA sequence to be inserted. The DNA polymerase extends the primers, displacing the original strand and producing a linear DNA product containing the inserted sequence. The resulting linear DNA can be further circularized, creating a circular recombinant DNA molecule.

DESCRIPTION

CPER offers a rapid and streamlined method for generating recombinant flaviviruses. Traditional techniques, such as reverse genetics, can be time-consuming and labor-intensive. CPER significantly shortens the process, enabling the generation of recombinant viruses in days rather than weeks. CPER allows the insertion of specific DNA sequences into the viral genome, facilitating the study of viral proteins, genetic variations, and the identification of critical viral determinants. This flexibility enables the investigation of various aspects of flavivirus biology and the development of novel tools and strategies for diagnosis and vaccine development. CPER can be applied to various flaviviruses, including dengue virus, Zika virus, West Nile virus, and Japanese encephalitis virus. The technique is not limited to any particular serotype or strain, making it highly versatile for studying different members of the flavivirus family. Functional Studies that is CPER allows the rapid generation of recombinant flaviviruses carrying specific mutations or deletions. This enables the investigation of viral protein functions, viral-host interactions, and the identification of genetic determinants of pathogenesis, replication, and immune evasion. CPER can be utilized to engineer attenuated flaviviruses for vaccine development. By introducing specific mutations associated with reduced virulence, recombinant viruses can be generated as potential vaccine candidates. These recombinant viruses can trigger immune responses while posing minimal risks to the vaccinated individuals. CPER can be employed to create recombinant viruses expressing reporter genes or epitope tags. These recombinant viruses serve as valuable tools for the development of diagnostic assays, allowing for sensitive and specific detection of flaviviruses in patient samples.Recombinant flaviviruses generated by CPER can be utilized in high-throughput screening assays to evaluate the efficacy of antiviral compounds. These recombinant viruses provide a valuable platform for studying viral replication, identifying potential targets for antiviral intervention, and testing the antiviral activity of drug candidates [1-4].

CONCLUSION

The Circular Polymerase Extension Reaction (CPER) has revolutionized the field of virology by enabling the rapid generation of recombinant flaviviruses. This powerful technique offers numerous advantages, including speed, efficiency, flexibility, and versatility. CPER has opened up new avenues for studying flavivirus biology, pathogenesis, and vaccine development. As the field of virology continues to advance, CPER will undoubtedly play a pivotal role in understanding and combating flavivirus infections, contributing to the development of effective diagnostics, therapeutics, and preventive measures.

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CONFLICT OF INTEREST

The author declares there is no conflict of interest in publishing this article.

REFERENCES

1. Musso D, Nilles EJ, Cao-Lormeau VM (2014) Rapid spread of emerging Zika virus in the Pacific area. Clin Microbiol Infect 20(10):O595–6.
2. Galindo-Fraga A, Ochoa-Hein E, Sifuentes-Osornio J, Ruiz-Palacios G (2015) Zika Virus: A new epidemic on our doorstep. Rev Invest Clin 67(6):329–32.
3. Hayes EB (2009) Zika virus outside Africa. Emerg Infect Dis 15(9):1347–50.
4. Katoh K, Standley DM (2013) MAFFT multiple sequence alignment software version 7: improvements in performance and usability. Mol Biol Evol 30(4):772–80.