Recombinant Enhanced Antiviral Restrictors

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ABSTRACT

Researchers at the University of California, Davis ("UC Davis") have developed fusion proteins effective in inhibiting the replication of diverse groups of viruses that can be useful in controlling vector-borne virus transmission as well as reducing vector populations.

FULL DESCRIPTION

Infectious diseases continue to present significant challenges because viruses acquire the ability to overcome host immune responses and spread efficiently. In particular, mosquito-borne viruses (such as flaviviruses) collectively infect hundreds of millions of people annually, are expanding their geographic ranges, and have vectors that are hard to control using conventional methods. However, current state-of-the-art strategies to prevent arbovirus transmission are either resource intensive (e.g., genetically engineering mosquitoes to manipulate fertility/fecundity, sex ratio, or vector competence for arboviruses) or virus specific. Moreover, the current approaches often do not target viruses from different families and cannot prevent transmission of unidentified viruses.

Thus, researchers at UC Davis have developed improved techniques for addressing the significant health challenges associated with viral infections. In particular, the researchers have developed fusion proteins effective in inhibiting the replication of diverse groups of viruses. The fusion proteins—also termed Recombinant Enhanced Antiviral Restrictors ("REAVRs")—can be used to treat disease or prevent transmission of multiple different viruses to, for example, humans. The virus sensor and effector domains of different antiviral proteins are combined to generate fusion proteins that detect nucleic acids (e.g., RNA types) that are formed by most virus families. The generated fusion proteins further inhibit a broader range of viruses compared to existing control strategies and can be used to detect and exert broad antiviral effects on various types of viruses.

APPLICATIONS

- Unique and broadly acting antiviral activities that simultaneously act as virus sensors and antiviral effectors

FEATURES/BENEFITS

- Exert potent antiviral activities against multiple RNA and DNA viruses, including those not inhibited by naturally occurring proteins
- Used to generate transgenic organisms with increased viral resistance
- Effective therapeutics for viral infections

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2024/092230	05/02/2024	2023-511

Additional Patent Pending

INVENTORS

- Rothenburg, Stefan

OTHER INFORMATION

KEYWORDS

fusion proteins, infectious diseases, antiviral, virus sensors, antiviral effectors, transgenic organisms, therapeutics

CATEGORIZED AS

- **Medical**
  - Disease: Infectious Diseases
  - Therapeutics
- **Research Tools**
  - Nucleic Acids/DNA/RNA

RELATED CASES

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