KAPOSI SARCOMA ASSOCIATED HERPESVIRUS GENE FUNCTION AND METHODS FOR DEVELOPING ANTIVIRALS, ANTI-KSHV VACCINES, AND KSHV BASED VECTORS

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CONTACT

Laleh Shayesteh
lalehs@berkeley.edu
tel: 510-642-4537.



INVENTORS

» Liu, Fenyong

OTHER INFORMATION

KEYWORDS

antiviral, vaccine, pathogenesis, therapeutic, ORF

CATEGORIZED AS

» **Medical**

» Disease: Autoimmune and Inflammation

» Disease: Infectious Diseases

» Therapeutics

» Vaccines

RELATED CASES

2022-033-0

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	WO 2023/076131	05/04/2023	2022-033

Patent Pending

BRIEF DESCRIPTION

The inventors present a novel strategy for achieving pathogen opportunistic pathogenesis, with broad implications for treating infectious diseases. In a comprehensive analysis of Kaposi sarcoma associated herpesvirus (KSHV), a medically important virus, the inventors discovered novel antiviral targets and gene function, and identified opportunistic factors with dual functions of regulating both the immune environment/responses and viral reactivation/replication. This discovery includes:

- A collection of KSHV mutants with inactivation or deletion of each of the 91 predicted open reading frames (91 mutant strains).
- Methods and reagents (e.g. primers) for construction of the collection of KSHV mutants.
- The identity of 44 KSHV essential genes, which represent potential antiviral targets (including 27 newly identified essential genes).
- Methods for construction of gene-inactivation and rescued mutants, and for tagging and introducing foreign genes into the KSHV genome. These approaches can be used for vector and vaccine development.
- Growth properties of viral mutants with inactivation of non-essential genes.
- Methods for screening mutants in different human cell lines.
- Opportunistic factors of KSHV and all other animal viruses that have dual functions as both the modulators of immune environment/response and regulators of viral reactivation/replication.

SUGGESTED USES

Development of therapies and vaccines for infectious diseases.

ADVANTAGES

By measuring virus production in the absence of lytic induction, it is possible to identify viral open reading frames (ORFs) regulating latency and spontaneous reactivation. Identification of these “no growth attenuation” genes presents an advantage over other attenuated dispensable genes; due to the conservation of near to wild-type like growth characteristics in tissue culture, high-titers of the gene therapy vector can be attained.

This discovery shows how viral reactivation is correlated with the status of immune status/responses. Under immunocompetent conditions, the mechanism could lead to viral latency with no onset of diseases, while under immunodeficient conditions it would lead to viral active replication with full blown viral diseases.

RELATED MATERIALS

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Salmonella-Based Gene Delivery Vectors and their Preparation

Berkeley
UNIVERSITY OF CALIFORNIA

University of California, Berkeley Office of Technology Licensing
2150 Shattuck Avenue, Suite 510, Berkeley,CA 94704
Tel: 510.643.7201 | Fax: 510.642.4566
https://ipira.berkeley.edu/ | otl-feedback@lists.berkeley.edu

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