WashU

Office of Technology Management

NOVEL ANTIVIRAL TREATMENT FOR YELLOW FEVER VIRUS

Chong, Zhenlu, Diamond, Michael, Fremont, Daved, Hui, Sean

Poranki, Deepika

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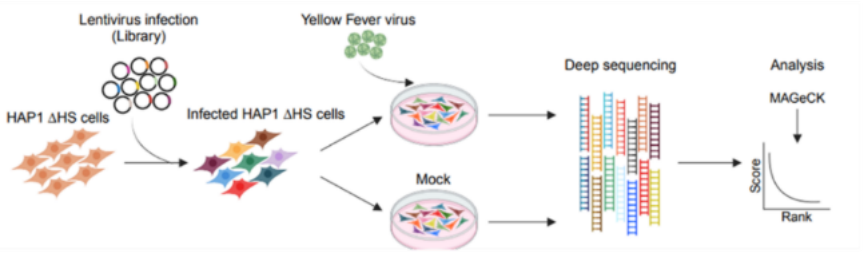
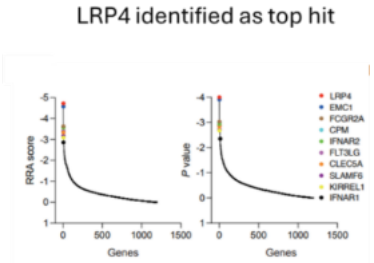
Value Proposition: *First antiviral treatment that uses soluble receptors to treat yellow fever.*

Technology Description

Researchers at Washington University in St. Louis have developed new soluble receptor decoy Fc-fusion protein inhibitors for the treatment of yellow fever virus (YFV). Orthoflaviviruses are a genus of arthropod-transmitted viruses in the Flaviviridae family (YFV, DENV, ZIKV, WNV, JEV, TBEV). Infections in humans are mosquito-borne and cause mild to severe disease including multi-organ failure, hemorrhage, meningitis, encephalitis, congenital malformations. Current methods to treat YFV focus on vaccination prior to infection. However, vaccine shortages and sporadic vaccination coverage have aided in YFV continuing to be a global health threat.

This invention utilizes synthesized molecules based on LRP4, an evolutionarily conserved single-pass, type I transmembrane protein and other receptor proteins identified to play major roles in YFV pathogenesis.





Stage of Research

Identified LRP4 as a key entry receptor for YFV and identified its ligand binding domain. Created an LRP4-based decoy with improved bioavailability that can inhibit YFV infection in vitro and in vivo. Deployment of decoy receptors based on LRP4 resulted in the discovery of additional YFV entry receptors, of which engineered decoy receptors based on LRP1 and VLDLR were also able to protect mice from YFV-induced mortality.

Publications

Multiple LDLR family members act as entry receptors for yellow fever virus. Nature 2025

Applications

- Yellow fever virus neutralization and treatment

Key Advantages

- First potential antiviral treatment for yellow fever
- Can be deployed after infection

Patents
Patent pending

Related Web Links – Michael Diamond Profile; Diamond Lab