Antiviral Compounds for HIV and Other Viral Infections

Tech ID: 27668 / UC Case 2013-151-0

INVENTION NOVELTY

This invention identifies a novel class of HIV inhibitors targeting RNA-protein interactions.

VALUE PROPOSITION

The global market for HIV drugs is around $20 billion annually. To find new and more effective HIV antivirals, scientists at UCSF have recently focused on viral regulatory complexes that perform critical functions in HIV replication and are important targets for therapeutic intervention. In HIV-infected cells, the Tat and Rev proteins form regulatory complexes with multiple viral and cellular factors to direct transcription and export of the viral RNA. Scientists have identified novel lead compounds that may disrupt the interaction between Rev and the Rev Response Element (RRE) thus preventing HIV replication. These molecules have been tested extensively in HIV replication studies in cell culture and in primary cells and represent an important step towards the development of a new class of HIV therapeutics that could eventually find a place in future HIV combination therapies.

The current invention provides the following advantages:

- Low toxicity and wide therapeutic window
- New mechanism-of-action
- Used in combination with existing RT, protease or integrase inhibitors
- May be used to treat diseases caused by other viruses

TECHNOLOGY DESCRIPTION

Through a screen for RNA-protein inhibitors, researchers at UCSF have identified a new class of HIV inhibitors. Following multiple rounds of medicinal chemistry and compound testing, the most advanced compounds have improved the efficacy more than two logs and are capable of inhibiting HIV replication with low-nanomolar IC_{50}s and Therapeutic Indices >10,000. Interestingly, the pathway to drug resistance is unique with these inhibitors and we have discovered that resistant viruses are defective in an important viral gene. These findings raise the question of whether the compounds could be used to drive the viral populations towards attenuation and possibly one step closer to a functional cure.

LOOKING FOR PARTNERS

To develop & commercialize the technology as a therapy for HIV and other viral infections

DATA AVAILABILITY

CONTACT

Shikha Sharma

shikha.sharma@ucsf.edu

tel: 415-502-1613.

INVENTORS

- Burlingame, Mark
- Frankel, Alan D.
- Nakamura, Robert
- Renslo, Adam R.

OTHER INFORMATION

KEYWORDS

Antiviral, Inhibitors, Rev, HIV, RRE, RNA-protein interactions

CATEGORIZED AS

- **Medical**
  - Disease: Infectious Diseases
  - New Chemical Entities, Drug Leads
  - Therapeutics

RELATED CASES

2013-151-0

In vitro data available

RELATED MATERIALS

- Nakamura, R. L., Burlingame, M. A., Yang, S., Crosby, D. C., Talbot, D. J., Chui, K., ... & Renslo, A. R. (2017). Identification and optimization of thienopyridine carboxamides as inhibitors of HIV regulatory complexes. Antimicrobial Agents and Chemotherapy, AAC-02366.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,154,992	12/18/2018	2013-151

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Improved Small Molecule Activators Of K2p Potassium Channels

ADDRESS

UCSF

Innovation Ventures

600 16th St, Genentech Hall, S-272,

San Francisco,CA 94158

CONTACT

Tel:

innovation@ucsf.edu

https://innovation.ucsf.edu

Fax: