Viral Expression Vector Targeting HIV-1

Tech ID: 30141 / UC Case 2010-709-0

SUMMARY

UCLA researchers from the Department of Microbiology, Immunology, & Molecular Genetics have developed a viral expression vector that combines two reagents effective against HIV-1 infection.

BACKGROUND

Highly active antiretroviral therapy (HAART) has decreased the morbidity and mortality of human immune deficiency virus (HIV) in all parts of the world. The effectiveness of this life-long treatment however is limited by the side effects and long term toxicities of the medications, their cost, and the often rapid development of drug resistance. Hematopoietic progenitor/stem cell (HPSC) based approaches may provide a continuous means of controlling HIV after a single or infrequent doses.

INNOVATION

UCLA researchers have developed a new viral expression vector capable of inhibiting binding of HIV to the cell and preventing HIV fusion into the cell. By targeting two different aspects of HIV infection, this combination viral expression vector increases treatment efficacy. The vector targets both CCR5, the primary HIV-1 co-receptor, as well as C46, an HIV entry inhibitor. Combination therapy protects from diverse strains of HIV and to prevent the emergence of drug resistant mutations. This new approach holds great promise as a one time or infrequent therapy that can eliminate the need for HAART. C46 and lentiviral vector transduction have been shown to be safe and non-immunogenic through human and antiviral studies.

APPLICATIONS

- HIV gene therapy

ADVANTAGES

- Single of infrequent dose needed
- Dual targets of action
- Potentially curative
- Eliminates need for lifelong HAART drugs
- Reduced cost of lifetime treatment
- Can reconstitute AIDS damaged immune systems

PATENT STATUS

Country	Type	Number	Dated	Case
Japan	Issued Patent	6840189	02/18/2021	2010-709
Australia	Issued Patent	2017254831	03/19/2020	2010-709
Switzerland	Issued Patent	3329772	10/16/2019	2010-709
Germany	Issued Patent	602010061586.3	10/16/2019	2010-709
Denmark	Issued Patent	3329772	10/16/2019	2010-709
Spain	Issued Patent	3329772	10/16/2019	2010-709
France	Issued Patent	3329772	10/16/2019	2010-709
United Kingdom	Issued Patent	3329772	10/16/2019	2010-709
Ireland	Issued Patent	3329772	10/16/2019	2010-709
Italy	Issued Patent	3329772	10/16/2019	2010-709

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OTHER INFORMATION

KEYWORDS

HIV, AIDS, gene therapy, CCR5, C46, HPSC, stem cells, viral expression, viral vector, transplant

CATEGORIZED AS

- **Medical**
  - Disease: Infectious Diseases
  - Stem Cell
  - Therapeutics

RELATED CASES

2010-709-0

Netherlands (Holland)	Issued Patent	3329772	10/16/2019	2010-709
Sweden	Issued Patent	3329772	10/16/2019	2010-709
Japan	Issued Patent	6529141	05/24/2019	2010-709
Australia	Issued Patent	2015213417	03/01/2018	2010-709
Japan	Issued Patent	6247259	11/24/2017	2010-709
Switzerland	Issued Patent	2949208	11/15/2017	2010-709
Germany	Issued Patent	2949208	11/15/2017	2010-709
Denmark	Issued Patent	2949208	11/15/2017	2010-709
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Netherlands (Holland)	Issued Patent	2949208	11/15/2017	2010-709
Sweden	Issued Patent	2949208	11/15/2017	2010-709
Hong Kong	Issued Patent	1168509	12/18/2015	2010-709
Japan	Issued Patent	5828838	10/30/2015	2010-709
Australia	Issued Patent	2010274031	10/29/2015	2010-709
Russian Federation	Issued Patent	2562868	09/10/2015	2010-709
Belgium	Issued Patent	2453735	07/08/2015	2010-709
Germany	Issued Patent	2453735	07/08/2015	2010-709
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United Kingdom	Issued Patent	2453735	07/08/2015	2010-709
Italy	Issued Patent	2453735	07/08/2015	2010-709
United States Of America	Published Application	20160243169	08/25/2016	2010-709
United States Of America	Published Application	20120201794	08/09/2012	2010-709
Canada	Published Application	2767972	01/20/2011	2010-709

Additional Patents Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Viral Vector Nanocapsule for Targeting Gene Therapy

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