# Pre-Selective Anti-HIV Vectors for Improved HIV Gene Therapy

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## ABSTRACT

Lentiviral vector and method to pre-select/sort anti-HIV gene transduced cells prior to clinical transplantation.

## FULL DESCRIPTION

Current HIV gene protocols including stem cell gene therapy have not demonstrated any efficacy in clinical trials due to low transduction efficiencies and low *in vivo* gene marking. Currently used marking methods include the use of EGFP, which is used as a reporter gene to track transduced cells or to sort cells by flow cytometry. EGFP is not a natural protein and can be recognized as a foreign antigen and transduced cells get rejected.

Researchers at the University of California, Davis have developed a novel anti-HIV lentivirus vector that expresses a selective cell surface marker to purify the transduced cells. Expression of this selective marker on the surface of the transduced hematopoietic stem cells gives these cells a unique cell surface signature which could be used to distinguish them from non-transduced cells. This selective marker is not found on the surface of CD34+ HSCs. Therefore, for HIV stem cell gene therapy these vectors can be used to pre-select or sort the anti-HIV gene transduced cells prior to clinical transplantation. The transduced cells can be purified by immunomagnetic bead separation to obtain a pure or enriched population of anti-HIV transfected cells.

## APPLICATIONS

- Use of pure or enriched population of hematopoetic stem cells for transplantation into HIV- infected patients

## FEATURES/BENEFITS

- Selective marker is a natural human protein and will not be recognized as a foreign antigen and transduced cells will not get rejected
- Allow for the isolation of and delivery of a pure or enriched population of anti-HIV gene transduced cells into patients

## PATENT STATUS

| Country | Type | Number | Dated | Case |
|---|---|---|---|---|
| United States Of America | Published Application | 20220347316 | 11/03/2022 | 2011-758 |
| United States Of America | Published Application | 20150283266 | 10/08/2015 | 2011-758 |

## RELATED TECHNOLOGIES

- HIV Gene Therapy Treatment

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## OTHER INFORMATION

**KEYWORDS**

Gene therapy, HIV, In vivo transduction, Vector, Cell therapy, Ex vivo, Pre-Selection Marker, Hematopoetic Stem Cells, Transplantation

**CATEGORIZED AS**

- **Biotechnology**
  - Health
- **Medical**
  - Disease: Autoimmune and Inflammation
  - Disease: Infectious Diseases
  - Gene Therapy
  - Stem Cell
  - Therapeutics

**RELATED CASES**

2011-758-0, 2013-029-0

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