
Engineering Lifelong Cellular Immunity to HIV

Grant Award Details

Engineering Lifelong Cellular Immunity to HIV

Grant Type: Quest - Discovery Stage Research Projects

Grant Number: DISC2-10748

Project Objective: To identify a therapeutic candidate comprising autologous, gene-modified HSC expressing anti-HIV Chimeric Antigen Receptor (CAR)

Investigator:

Name:	Scott Kitchen
Institution:	University of California, Los Angeles
Type:	PI

Disease Focus: HIV/AIDS, Infectious Disease

Human Stem Cell Use: Adult Stem Cell

Cell Line Generation: Adult Stem Cell

Award Value: \$1,701,178

Status: Closed

Progress Reports

Reporting Period: Year 2/NCE

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Grant Application Details

Application Title: Engineering Lifelong Cellular Immunity to HIV

Public Abstract:**Research Objective**

We aim to uncover a therapeutic approach to attempt to treat and potentially cure HIV infection using gene modified blood forming stem cells to enhance the immune response against HIV.

Impact

The study will allow a potentially curative treatment for HIV infection, which currently doesn't exist. This will eliminate the need to administer antiviral medication for a lifetime.

Major Proposed Activities

- We will test and identify an optimized chimeric antigen receptor (CAR) to modify blood forming stem cells to form cells that will target HIV infection using humanized mice.
- We will achieve cell specific expression of the CAR in T cells and natural killer cells for better efficacy and safety in the cells that the molecule would work best in targeting HIV infection.
- In a system that highly resembles humans, we will transplant non-human primates with several candidate chimeric antigen receptors to compare and test optimized transplantation strategies.
- We will identify the best chimeric antigen receptor and the optimal transplantation protocol in HIV/SIV (SHIV) infected non-human primates, providing insight into using this therapy in HIV+ humans.

Statement of Benefit to California:

California ranks second in the nation in cases of HIV, with over 170,000 persons currently living with HIV with the direct healthcare cost to California approaching \$1.8 billion annually. A curative treatment is therefore a high priority. A stem cell based therapy offers promise for this goal, by providing an inexhaustible source of protected, HIV specific immune cells that would provide constant surveillance and potential eradication of the virus in the body.

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