Genetic modification of the human genome to resist HIV-1 infection and/or disease progression

Grant Award Details

Genetic modification of the human genome to resist HIV-1 infection and/or disease progression

Grant Type: SEED Grant
Grant Number: RS1-00172
Investigator:

<table>
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<tr>
<th>Name</th>
<th>Irvin Chen</th>
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<tr>
<td>Institution</td>
<td>University of California, Los Angeles</td>
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<td>Type</td>
<td>PI</td>
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Disease Focus: HIV/AIDS, Immune Disease, Infectious Disease
Human Stem Cell Use: Embryonic Stem Cell
Award Value: $616,800
Status: Closed

Progress Reports

Reporting Period: Year 2
View Report

Grant Application Details

Application Title: Genetic modification of the human genome to resist HIV-1 infection and/or disease progression
The proposed studies describe the genetic approaches utilizing human embryonic stem cells to suppress and/or eliminate the expression of the human protein CCR5. CCR5 is found on the surface of white blood cells. HIV-1 attaches to CCR5 and uses CCR5 to enter into its target cells. Our approach is to utilize established as well as new non-established approaches to prevent CCR5 from appearing on the surface of the cells. If CCR5 is not present, HIV-1 cannot infect the cells. Interestingly, this concept has already been proven in nature. Approximately 1% of the Caucasian population is genetically deficient for CCR5 and these individuals are resistant to HIV-1 transmission. Their white blood cells, when placed in culture, also resist HIV-1 infection in the laboratory. As such, we believe that our approach can be used to protect high risk individuals from HIV-1 infection as well as impede or stop progression of disease in those individuals already infected.

According to the Centers for Disease Control, California is second only to New York of individuals living with AIDS. Developing means to stop HIV-1 infection and cure those individuals already infected with HIV-1 is of paramount importance for the state of California.