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

**Grant Award Details**

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

**Grant Type:** SEED Grant

**Grant Number:** RS1-00172

**Investigator:**

<b>Name:</b>	Irvin Chen
<b>Institution:</b>	University of California, Los Angeles
<b>Type:</b>	PI

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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**

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**Reporting Period:** Year 2

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**Grant Application Details**

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

**Public Abstract:** 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.

**Statement of Benefit to California:** 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.

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**Source URL:** <https://www.cirm.ca.gov/our-progress/awards/genetic-modification-human-genome-resist-hiv-1-infection-and-or-disease>