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**Preclinical Development of An HSC-Engineered Off-The-Shelf iNKT Cell Therapy for Cancer**

**Grant Award Details**

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Preclinical Development of An HSC-Engineered Off-The-Shelf iNKT Cell Therapy for Cancer

**Grant Type:** Quest - Discovery Stage Research Projects

**Grant Number:** DISC2-11157

**Project Objective:** The expected outcome is a therapeutic candidate, allogeneic HSC-engineered HLA-I/II-negative human iNKT cells, that can potentially be used as an off-the-shelf cellular therapy for treating cancer.

**Investigator:**

|                     |                                       |
|---------------------|---------------------------------------|
| <b>Name:</b>        | Lili Yang                             |
| <b>Institution:</b> | University of California, Los Angeles |
| <b>Type:</b>        | PI                                    |

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**Disease Focus:** Cancer

**Human Stem Cell Use:** Adult Stem Cell

**Award Value:** \$1,404,000

**Status:** Closed

**Progress Reports**

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**Reporting Period:** Year 2/NCE

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**Grant Application Details**

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**Application Title:** Preclinical Development of An HSC-Engineered Off-The-Shelf iNKT Cell Therapy for Cancer

**Public Abstract:****Research Objective**

The expected outcome is a therapeutic candidate, allogeneic HSC-engineered HLA-I/II-negative human iNKT cells, that can potentially be used as an off-the-shelf cellular therapy for treating cancer.

**Impact**

The proposed off-the-shelf HSC-engineered iNKT therapy has the potential to become a general cancer immunotherapy for treating multiple cancers and a large population of cancer patients.

**Major Proposed Activities**

- Milestone 1: Production of the Universal HSC-Engineered iNKT (UHSC-iNKT) cells  
(1. Generate lentivector; 2. Generate CRISPR; 3. Collect HSCs; 4. Engineer HSCs; 5. Produce HSC-engineered iNKT cells.)
- Milestone 2: Characterization of the UHSC-iNKT cells  
(1. Identity/activity/purity; 2. PK/PD; 3. MOA; 4. Efficacy; 5. Safety; 6. Combination therapy.)
- Milestone 3: Delivery of the new therapeutic candidate  
(1. Identify UHSC-iNKT cells as the new therapeutic candidate; 2. Develop a draft TPP; 3. Prepare for and conduct a pre-pre-IND meeting.)

**Statement of Benefit to California:**

iNKT cells have the remarkable capacity to target a broad range of cancers independent of tumor antigen- and MHC-restrictions. The proposed HSC-engineered off-the-shelf iNKT cellular product has the potential to benefit a large population of cancer patients at California who suffer from cancers that are subject to iNKT cell regulation, including solid tumors (melanoma, colon, lung, breast, and head and neck cancers) and blood cancers (leukemia, multiple myeloma, and myelodysplastic syndromes).

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