
Biomaterial vaccine to enhance the formation of SARS-CoV-2-specific T memory stem cells

Grant Award Details

Biomaterial vaccine to enhance the formation of SARS-CoV-2-specific T memory stem cells

Grant Type: Discovery Research Projects

Grant Number: DISC2COVID19-11838

Project Objective: To select a drug delivery platform that will boost T memory stem cells and enhance vaccine response against SARS-CoV-2 with the intention of helping to protect the elderly with declined immune responses.

Investigator:

Name:	Song Li
Institution:	University of California, Los Angeles
Type:	PI

Disease Focus: COVID-19, Infectious Disease

Human Stem Cell Use: Adult Stem Cell

Award Value: \$149,916

Status: Active

Grant Application Details

Application Title: Biomaterial vaccine to enhance the formation of SARS-CoV-2-specific T memory stem cells

Public Abstract:**Research Objective**

The objective of this project is to develop an injectable biomaterial platform that can induce TMSCs and boost immunoactivation to vaccines against SARS-CoV-2, which will help protect elderly people.

Impact

This approach will boost T memory stem cell production to enhance immunization, and address the low/weak immunoresponses to vaccines, especially in the elderly and patients with immune deficiency.

Major Proposed Activities

- Fabricate artificial antigen presenting cells (aAPCs). (month 1 – month 3)
- Enhanced affinity and prolonged release of cytokines. (month 2 – month 4)
- Preparation and integration of biomaterial vaccine. (month 3– month 5)
- Engineer the fate and functions of murine and human T cells in vitro. (month 5 – month 8)
- Perform in vivo immunization assays. (month 8 – month 10)
- Study the formation of TMSCs in vivo. (month 9 – month 11)

Statement of Benefit to California:

Vaccine will be essential to stop the spread of COVID-19 in California and world wide. However, vaccine may not be effective enough for the people who need them most: elderly population who have declined immunue responses to vaccines. The biomaterial-based vaccine proposed here will boost the effectiveness of the vaccination for the elderly people and patients with other diseases, and will help fight COVID-19 virus, flus and other infectious diseases.

Source URL: <https://www.cirm.ca.gov/our-progress/awards/biomaterial-vaccine-enhance-formation-sars-cov-2-specific-t-memory-stem-cells>