A Novel Method to Functionally Screen Pooled Libraries of Synthetic, Genetically-encoded Signaling Molecules and Systems

Tech ID: 25618 / UC Case 2015-220-0

INVENTION NOVELTY

This technology contains a method of screening pooled libraries of synthetic, genetically-encoded constructs and assessing functional effects of the variants on cell activity. This approach can be used to screen a large number synthetic signaling molecule that alters cell behavior and function.

VALUE PROPOSITION

Synthetic signaling proteins, such as chimeric antigen receptors, can be used to engineer cells for therapeutic functions. Design and optimization; however, can be challenging and time-consuming since it requires individual testing of each variant. To improve and accelerate this process, investigators at UCSF have developed a method to screen a pooled library of synthetic constructs that have been transferred into a host cell type of interest.

This invention provides the following advantages:

-Rapid screening of a large number of synthetic variant genes

-Method for pooling variants and testing activity as a group

-Supports customization of functional read-out assays including *in vitro* cell characterization and *in vivo* mouse models

TECHNOLOGY DESCRIPTION

The Researchers at the University of California, San Francisco have developed a method of assembling a library of constructs that are each linked to a DNA barcode, and then transferred into the cell of interest. Since each variant construct can be tracked with a DNA barcode, a large number of variants can be tested simultaneously at the single-cell level. In addition, functional assays both in vitro and in vivo can be tailored to detect optimization of a given parameter. This method can be used for rapid optimization of synthetic signaling gene systems.

LOOKING FOR PARTNERS

To develop and commercialize the technology as a research tool

STAGE OF DEVELOPMENT

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OTHER INFORMATION

KEYWORDS

Pooled library screen,

Synthetic construct screen,

Adoptive cell transfer therapy

CATEGORIZED AS

- **Research Tools**
  - Screening Assays

RELATED CASES

2015-220-0

Proof of Principal

DATA AVAILABILITY

Under CDA/NDA

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	12,460,199	11/04/2025	2015-220
Lithuania	Issued Patent	3954772	10/25/2023	2015-220
Luxembourg	Issued Patent	3954772	10/25/2023	2015-220
Latvia	Issued Patent	3954772	10/25/2023	2015-220
Malta	Issued Patent	3954772	10/25/2023	2015-220
United States Of America	Issued Patent	11,560,561	01/24/2023	2015-220
Israel	Issued Patent	257453	10/02/2022	2015-220
Mexico	Issued Patent	393983	07/15/2022	2015-220

Additional Patent Pending

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- A Chimeric Receptor Platform for Combinatorially Modulating Control of Cell Activities
- SELECTIVE CONTROL AND TUNING of CHIMERIC AGONIST RECEPTORS (CARs) ACTIVITY for CELL-BASED IMMUNOTHERAPY

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