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

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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

DATA AVAILABILITY

Under CDA/NDA

PATENT STATUS

Country	Type	Number	Dated	Case
Japan	Issued Patent	7397821	12/05/2023	2015-220
European Patent Office	Issued Patent	3954772	10/25/2023	2015-220
United States Of America	Issued Patent	11,560,561	01/24/2023	2015-220
India	Issued Patent	464782	01/11/2023	2015-220
Australia	Issued Patent	2016315941	12/22/2022	2015-220
Israel	Issued Patent	257453	10/02/2022	2015-220
Eurasian Patent Office	Issued Patent	041085	09/12/2022	2015-220
Mexico	Issued Patent	393983	07/15/2022	2015-220
Hong Kong	Issued Patent	1256838	04/14/2022	2015-220
China	Issued Patent	ZL201680057253.X	03/29/2022	2015-220
Austria	Issued Patent	3344803	08/04/2021	2015-220
Belgium	Issued Patent	3344803	08/04/2021	2015-220
Switzerland	Issued Patent	3344803	08/04/2021	2015-220
Germany	Issued Patent	3344803	08/04/2021	2015-220
Spain	Issued Patent	3344803	08/04/2021	2015-220
France	Issued Patent	3344803	08/04/2021	2015-220
United Kingdom	Issued Patent	3344803	08/04/2021	2015-220
Ireland	Issued Patent	3344803	08/04/2021	2015-220
Italy	Issued Patent	502021000082991	08/04/2021	2015-220
Liechtenstein	Issued Patent	3344803	08/04/2021	2015-220
Netherlands (Holland)	Issued Patent	3344803	08/04/2021	2015-220
Portugal	Issued Patent	3344803	08/04/2021	2015-220
Japan	Issued Patent	6878408	05/06/2021	2015-220
Brazil	Published Application	2491	10/02/2018	2015-220
Canada	Published Application			2015-220
Rep Of Korea	Published Application			2015-220
New Zealand	Published Application			2015-220

Additional Patents Pending

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