
Case name

Robust Genome Engineering in Primary Human T Cells using CRISPR/Cas9 Ribonucleoproteins

Owner

University of California

Website

<https://techtransfer.universityofcalifornia.edu/NCD/24858.html>

description

UCSF researchers have developed a powerful Cas9 RNP-based technology that uses purified Cas9 ribonucleoproteins (RNP) for successful and efficient genome editing in primary human CD4⁺ T cells. Cas9 protein pre-complexed with a single guide RNA (sgRNA) is introduced as an RNP into human T cells by transient electroporation. The active complexes enabled the first successful Cas9-mediated homology directed repair (HDR) in primary human T cells. Cas9 RNPs have allowed generation of 'knock-in' primary human T cells with targeted genetic replacement of specific nucleotides, which was previously unattainable.

Application

- 1) Unprecedented flexibility to 'knock-out' and 'knock-in' specific genetic elements in engineered T cells for cancer immunotherapy
- 2) New opportunity for therapeutic gene correction for primary immune deficiencies, treatment of infections and autoimmune diseases
- 3) Diverse research applications examining the function of coding and non-coding genetic variation in human immune regulation

Stage of Development

Proof of principle

Related Materials

- Not available at this time

Data Availability

In vitro human data

Date

2017-01-08 00:00:00

Case Ref.

UC Case 2015-118-0

Industry

Healthcare

Application number

please inquire

Applicants

University of California

Limitations:

Meta information:

Meta title

Robust Genome Engineering in Primary Human T Cells using CRISPR/Cas9 Ribonucleoproteins

Support:

Access to additional documentation

Please inquire

Support from inventors

Please inquire