



**ANTI-INFLAMMATORY**

# MAIT Cell Immunomodulation for Targeted Treatment of Inflammatory Diseases

## Brief Description of Technology

MAIT cells undergo targeted therapeutic exploitation to alter CTLA-4 expression and dampen inflammatory responses.

### BUSINESS OPPORTUNITY

Exclusive license  
Sponsored research

### TECHNOLOGY TYPE

Cell therapy  
Target  
Therapeutic

### STAGE OF DEVELOPMENT

Preclinical *in vitro*

### PATENT INFORMATION

Patent pending

### INVESTIGATOR

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### LEARN MORE

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## Technology Overview

Mucosal-associated invariant T (MAIT) cells are non-conventional T cells that localize within inflamed tissue. Upon activation, MAIT cells act as effector cells with both cytotoxic and pro-inflammatory properties. The Prlic Lab determined MAIT cells have a unique transcriptional signature based on whether located within the blood or inflamed tissue. Conventional T cells activate through a TCR signal, however, MAIT cells require both TCR and inflammatory signals to elicit sustained effector function. They also established that an inflammatory signal could elicit CTLA-4 expression *ex vivo*, and that use of both TCR and inflammatory signals had a synergistic effect. Given MAIT cells detect bacteria-derived metabolites and not peptides, MAIT cells can be specifically targeted to alter CTLA-4 expression for immunomodulatory purposes.

## Applications

- Graft-vs-host disease
- Post-transplantation immune reconstitution
- Tumor treatment
- Mucosal inflammatory diseases (e.g., Crohn's disease)

## Advantages

- Controlled expression of CTLA-4 in MAIT cells
- Targeted immunomodulation within inflamed mucosal tissues
- MAIT cell activation will not affect conventional T cell activity

## Market Overview

In 2015, the World Health Organization estimated that 3 million US adults [1.3% of the population] were diagnosed with either Crohn's disease or ulcerative colitis. The global anti-inflammatory therapeutics market is predicted to reach USD 130.6 billion by 2026 with a predicted CAGR of 8.5% between 2018 and 2026. The combination of increasing prevalence of inflammatory diseases (e.g., Crohn's) and an impressive drug pipeline are boosting the market growth.