



## OBESITY TREATMENT

# Immunotherapy for the Treatment of Obesity

## Brief Description of Technology

A method for using immunotherapy to identify, target and eliminate fat cells.

### BUSINESS OPPORTUNITY

Exclusive license  
Non-exclusive license

### TECHNOLOGY TYPE

Obesity  
Immunotherapy  
CAR-T  
Biologic

### STAGE OF DEVELOPMENT

Preclinical *in vitro*  
Preclinical *in vivo*

### PATENT INFORMATION

US 9163258

### LEARN MORE

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## Technology Overview

Currently, there are no treatments for obesity that directly target and eliminate adipocytes [fat cells]. Dr. Stanley Riddell in collaboration with colleagues at the NIH have demonstrated that an anti-ROR1 CAR-T is able to specifically recognize mature adipocytes and exert cytolytic activity. The only normal tissue that expresses the ROR1 protein on the surface of the cell is preadipocytes, progenitor fat cells making them an ideal therapeutic target for immunotherapy. Experiments in nonhuman primates also demonstrated the favorable safety profile of administering anti-ROR1 CAR-T cells *in vivo*.

## Applications

- Method of reducing adipocytes by targeting ROR1 with CAR-T cells

## Advantages

- Novel mechanism for treatment of obesity

## Market Overview

Obesity is a growing problem in the United States, where 35.7% of adults are considered obese and an additional 33.1% are considered overweight. This is also an issue for ages 2-20 where 16.9% are considered to be obese. Obesity is the leading cause of Type 2 diabetes, disability, heart disease, morbidity, and mortality. The current US medical cost of obesity is estimated to be \$147 billion to \$210 billion per year. The global market for obesity drugs and therapies is predicted to reach \$7.8 billion by 2021 at a CAGR of 12.7% from 2016 to 2021.

## Investigator Overview

**Stanley Riddell, MD**, Clinical Research Division