

# Treating Type 2 Diabetes by Targeting CAP Protein in the Macrophage

Tech ID: 23306 / UC Case 2006-063-0

## BACKGROUND

CAP (Cbl associated protein) is an adapter protein that is ubiquitously expressed. CAP acts in concert with Cbl to stimulate glucose uptake in skeletal muscle and adipose tissue as well as to induce the proliferation and migration of macrophages. Whole body CAP gene deletion in mice results in a protection from insulin resistance induced by high fat diet. However, exercise capacity is severely blunted in these mice.

## TECHNOLOGY DESCRIPTION

UCSD researchers have found that a tissue specific gene deletion of CAP in the macrophage results in a similar protection from insulin resistance without limiting the exercise capacity in the host. By transplanting CAP deleted bone marrow to normal mice, macrophage-specific deletion of CAP was achieved. CAP deletion in the macrophage appeared to protect target tissues such as the muscle and liver from impaired insulin sensitivity without incapacitating the mouse. Thus, targeting CAP in the macrophage may be effective in treating patients in impaired glucose tolerance and/or type 2 diabetes.

## APPLICATIONS

This technology can potentially enable the development of therapeutics for insulin resistance and type 2 diabetes.

## STATE OF DEVELOPMENT

The effect of tissue-specific deletion of CAP has been demonstrated in the mouse model.

## RELATED MATERIALS

- ▶ Lesniewski LA, Hosch SE, Neels JG, de Luca C, Pashmforoush M, Lumeng CN, Chiang SH, Scadeng M, Saltiel AR, Olefsky JM. Bone marrow-specific Cap gene deletion protects against high-fat diet-induced insulin resistance. Nat Med. 2007 Apr; 13(4):455-62. Epub 2007 Mar 11. - 04/01/2007

## PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,420,612	04/16/2013	2006-063

## ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ Beta-Arrestin Biased GPCR Agonists for Inflammation and Metabolic Disease

## CONTACT

University of California, San Diego  
Office of Innovation and Commercialization  
[innovation@ucsd.edu](mailto:innovation@ucsd.edu)  
tel: 858.534.5815.



## INVENTORS

- ▶ Olefsky, Jerrold M.

## OTHER INFORMATION

### KEYWORDS

Type 2 diabetes, glucose tolerance,  
  
Cbl, Cbl-associated protein,  
  
macrophage

### CATEGORIZED AS

- ▶ **Medical**
  - ▶ Disease: Metabolic/Endocrinology
  - ▶ Gene Therapy

### RELATED CASES

2006-063-0