

# Novel Target Gene for Treatment of Metabolic Disorders

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## ABSTRACT

Researchers at the University of California, Davis have discovered inhibiting the gene Gc improves metabolic health by protecting against obesity and type 2 diabetes without appetite suppression or muscle loss.

## FULL DESCRIPTION

This technology involves the inhibition of the gene Gc, encoding the Vitamin D Binding Protein, to treat and prevent metabolic disorders including obesity and type 2 diabetes. Studies in mice fed a high-fat diet demonstrate that Gc inhibition enhances beta-cell function, insulin sensitivity, and energy expenditure, leading to selective fat loss while preserving lean muscle mass. Unlike existing therapies such as GLP-1 receptor agonists, this approach avoids common side effects like nausea, vomiting, appetite suppression, and muscle wasting. The technology employs nucleic acid therapeutics, such as shRNA delivered via viral vectors or lipid nanoparticles, targeting Gc expression in liver, blood, and pancreas.

## APPLICATIONS

- ▶ Treating obesity and related metabolic disorders.
- ▶ Therapeutic intervention for type 2 diabetes management.
- ▶ Gene therapy and nucleic acid-based drugs targeting metabolic diseases.
- ▶ Pharmaceutical compositions including viral or lipid nanoparticle delivery systems.
- ▶ Preventative treatments for subjects at risk of metabolic syndrome.

## FEATURES/BENEFITS

- ▶ Improves beta-cell function and insulin sensitivity.
- ▶ Selective fat mass loss without muscle mass reduction.
- ▶ Increases energy expenditure without reducing food intake.
- ▶ Minimizes side effects common to current diabetes and obesity drugs (e.g., nausea, vomiting).
- ▶ Offers a novel gene-targeting therapeutic modality.
- ▶ Addresses the progression of obesity and type 2 diabetes.
- ▶ Counteracts insulin resistance and beta-cell failure linked to diabetes.
- ▶ Prevents muscle loss and gastrointestinal side effects caused by existing treatments.
- ▶ Fulfills the need for therapies that reduce fat without impacting appetite or muscle mass.
- ▶ Overcomes limitations of current pharmacological agents such as GLP-1 receptor agonists.

## PATENT STATUS

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## OTHER INFORMATION

### KEYWORDS

adenoviral vector,  
 diabetes, fat loss, gene  
 inhibition, metabolic  
 disorder, obesity, shRNA,  
 type 2 diabetes, vitamin  
 D binding protein, weight  
 loss

### CATEGORIZED AS

- ▶ **Biotechnology**
- ▶ Health
- ▶ **Medical**
- ▶ Disease:  
 Metabolic/Endocrinology
- ▶ Gene Therapy
- ▶ **Research Tools**
- ▶ Nucleic  
 Acids/DNA/RNA
- ▶ Vectors

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