TITLE: A Molecular Mimetic of Exercise  
INVENTORS: Eric Olson, Rhonda Bassel-Duby, Leonela Amoasii  
TECHNOLOGY: Biologicals  
UTSD: 3093

SUMMARY: This technology describes the repurposing of an FDA approved drug for treatment of metabolic diseases.

As the major tissue in the body, skeletal muscle plays a central role in the control of systemic energy homeostasis and exercise tolerance. It was previously reported that the mediator subunit MED13 modulates glucose uptake and metabolism in skeletal muscle. One of the targets of MED13 is an orphan nuclear receptor. The inventors show that this receptor acts in skeletal muscle to regulate a cohort of metabolic genes that enhance glucose uptake and homeostasis. These findings provide new insights into the molecular basis of metabolic diseases.

Over-expression of the receptor in mouse skeletal muscle is sufficient to mimic exercise, more specifically, prevent hyperglycemia and hepatic steatosis in response to high fat diet. Prior drug screening studies by others have shown that a collection of compounds sharing a common chemical scaffold are capable of activating this orphan nuclear receptor by binding the ligand-binding domain. One of these compounds is an FDA approved anti-inflammatory and anti-malarial drug.

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Please reference UT Southwestern Case Number: 3093