

• RESEARCH

# STOP SIGN FOR OBESITY



A CLEVELAND Clinic researcher has made a discovery that could lead to new drugs to prevent or treat obesity — and the diseases that come with it.

J. Mark Brown, PhD, of the Lerner Research Institute, successfully prevented obesity, type 2 diabetes and liver damage in a lab study in which mice were fed a high-fat diet, a known risk factor. While researching a rare mutation of the gene *ABHD5*, which alters how the body stores fat, Dr. Brown stumbled across its cousin: *ABHD6*, instrumental in regulating appetite.

*ABHD6* is part of a system that modulates functions such as appetite, mood and pain. Previous studies have shown that blocking this system can reduce obesity. But doing so comes with serious side effects, including anxiety, depression and suicidal thoughts. *ABHD6*, however, might provide an alternative. It exists throughout the body, not just in the brain. Dr. Brown set out to block *ABHD6* in a peripheral area, the liver, to see if he could prevent obesity without triggering side effects.

After 12 weeks, the result was a “striking metabolic outcome,” Dr. Brown says. Lab study subjects did not gain weight or develop type 2 diabetes or liver disease — and they were more active. The next step is developing a phase I trial in humans. “We still have a lot of biology to understand. We don’t know how *ABHD6* impacts the central nervous system or how the brain is signaling the animals to move around more,” he says. Little was previously known about *ABHD6*, so the discovery is promising, Dr. Brown says. “We have a unique stake in the ground.” — *Melanie Padgett Powers*

• DIAGNOSIS

# ULTRASOUND IDEA

A BIOPSY IS an important clinical tool that helps physicians make a diagnosis, such as whether a tumor is cancerous. However, biopsies are invasive procedures, often followed by days of stressful waiting for lab results.

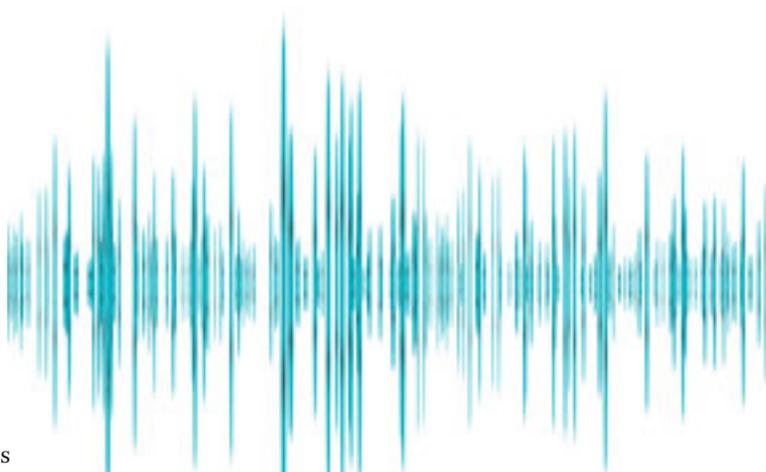
What if patients could avoid a biopsy and undergo a painless, quick test in their doctor’s office instead? Physicist Gregory Clement, PhD, of Cleveland Clinic’s Lerner Research Institute, is studying the use of ultrasound to detect cancer as a faster and simpler alternative to biopsy.

Ultrasound uses sound waves

to detect what is happening in the body in real time. “One thing you can detect with ultrasound is blood flow, analyzing it to see how blood is flowing relative to its movement in surrounding tissues,” Dr. Clement says.

Blood vessels within certain tumors tend to grow in random patterns. Dr. Clement is developing mathematical methods to detect and analyze these chaotic patterns using ultrasound, thus differentiating between benign and cancerous tumors.

This method requires being able to measure blood flow in



capillaries, the body’s smallest blood vessels. Dr. Clement injects “microbubbles” that move harmlessly throughout the bloodstream. “The bubbles give ultrasound something to bounce off of, making the ultrasound signal much stronger,” he says.

Currently, Dr. Clement is creating chaotic blood flow with artificial blood vessels in his lab, which then are detected

and analyzed by a computer model. If the research continues to succeed, he hopes to move to human testing in the next two to three years.

One day, physicians may be able to diagnose cancer and intervene more quickly. “You could check it and have an instant answer, and with cancer, time is extremely important,” Dr. Clement says. — *Melanie Padgett Powers*