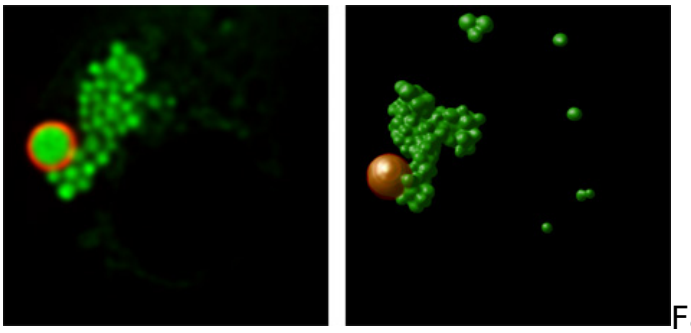
Dual Fat Storage Has Health Implications



Fat is stored in the body in two distinct ways, Yale [1] researchers have discovered. While the finding may not help people shed excess pounds, it may shed light on how to prevent health problems associated with weight gain.

“We need a better understanding of how cells actually package fat,” said Tobias Walther, associate professor of cell biology at Yale and senior author of the study published online in the journal Developmental Cell [2]. “The cell’s inability to process all the excess energy— not the fat itself— is what causes most health problems.”

Unused metabolic energy triggers the production of triacylglycerol and the creation of fat in the form of lipid droplets. Mammals have developed specialized fat cells called adipose tissue to store this energy. It is the rapid expansion of these lipid droplets while storing excess calories that cause the bulging waists and thighs that plague dieters. Health problems occur when cells become overwhelmed with lipids and lose their ability to store energy. The result is inflammation, insulin resistance, fatty liver and other health problems associated with obesity.

The Yale researchers working with Robert Farese at the University of California-San Francisco [3] found that not all lipid droplets are the same. One type of lipid droplet was small and does not expand. A second type of lipid droplet, however, has triacylglycerol enzymes on its surface that allows it to expand.

“Dr. Walther’s exciting finding that some lipid droplets can grow while others do not should lead to ways to prevent cells from storing excess fat and possibly to new approaches for treating obesity,” said Jean Chin of the National Institutes of Health [4]’s National Institute of General Medical Sciences, which partly funded the work.

Walther said that exploring ways to prevent failure of cells’ ability to accommodate excess energy may be a more effective way to tackle the health problems associated with obesity than simply trying to get rid of fat itself.

“Historically, concentrating on just burning fat cells has not worked too well,” he said.

Florian Wilfling of Yale is first author of the paper.

Source: Yale University [1]

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