

Skill: Reading	Level of Assessment: Advanced High
ACTFL Topic: Press	Title: Burning Fat
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You are on a diet program and are interested in reading articles about weight loss. You find this article on the Web. Read it to get some ideas and answer the questions below.

BEHIND THE BULGE, THERE'S A LOT OF ACTIVITY



David Bernlohr and Ann Hertzel are part of a research group gaining a new understanding of fat and how it behaves in the body.
Photo by Tim Rummelhoff

By Mary Hoff
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When scientists start talking about what molecules do inside cells, listeners' eyes often start to glaze over. But when David Bernlohr, head of the Department of Biochemistry, Molecular Biology, and Biophysics, mentions his sub-cellular research, people prick up their ears instead.

Bernlohr studies adipocytes, the cells that suck fat from our bloodstream and stash it away in our hips, stomachs, and thighs. In today's overweight world, plenty of folks would like to know how these cells do what they do--and how we can keep them from doing it so darn well.

Adipocytes were literally lifesavers for past generations, helping keep our ancestors from starving by providing a backup energy source when food was scarce. But in a food-saturated environment, their fat-hoarding tends to cause trouble instead. Thanks to their diligence, two-thirds of Americans are overweight. Moreover, obesity directly leads to other diseases such as type II diabetes, hypertension, and cardiovascular disease, making it the nation's number one health issue.

Up until 10 years ago or so, the prevailing view was that adipocytes were little more than expandable containers where our bodies stocked up supplies for hard times. "Over the last decade, that view has changed dramatically," Bernlohr says. In addition to collecting calories,

he says, we now know that adipocytes "secrete a raft of hormones that regulates a number of processes" related to the fate of fat within our bodies. The more we learn about how they do this, Bernlohr says, the better able we will be to direct their activity so they help rather than harm us.

"Humans evolved under conditions of nutrient limitation. Now, with industrialization, we live in an environment of nutrient excess, and our bodies don't know how to respond," says U researcher David Bernlohr.

Bernlohr is currently working to understand how fats enter adipocytes, how they move once inside, and how they regulate genes that might influence the onset of obesity-related health problems. In one set of studies he's looking at the class of molecules, known as FATPs, that ferry fat across the cell membranes. He has cloned the gene that makes one such ferry. He has also discovered that a helper molecule known as Coenzyme A plays a key role in their ability to do so.

Within cells, Bernlohr is focusing on fatty acid binding proteins (FABPs), which shuttle fatty acids from one place to another. By studying animals that lack FABP genes, he's learning a lot about the role these proteins play in not only making fat cells fatter, but also in sending messages to other parts of the body that may result in obesity-related disease.

Bernlohr has not only been studying adipocytes, he also has applied what he's learned to develop an innovative eating regimen he calls the Northwoods Diet. "Miami has its South Beach, I figure we could have our Northwoods," he says.

The plan allows carbohydrates in the morning (to get insulin flowing), but switches to proteins and fats in the afternoon, with no food at all after 7:30 p.m. Bernlohr has dropped 45 pounds following his own advice, and says others in his lab who have tried the plan have lost weight as well.

From the original story in Bio, fall 2004, a publication by the College of Biological Sciences.

1. What are "adipocytes"?
 - a. Genes that regulate fat intake
 - b. Cells that prevent fat transfer into blood cells
 - c. Cells that carry fat
 - d. A backup sugar source

2. List two items that you would eat for breakfast if you were following the "Northwoods Diet".
 - a. _____

 - b. _____

3. What can be inferred from the text above about the conditions many years ago?
 - a. There was much more reliance on wheat in diets
 - b. The past generations had much less to eat
 - c. The human body was genetically different
 - d. Humans had many more fatty acid binding cells

4. In the text above, underline one concrete example of observable research in Dr. Bernlohr's results.

5. Write one sentence summarizing the main similarity between FATP and FABP as can be deduced from the text.
