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## **Obesity, Linked to the Bones!**

### *Bone hormone can make you slim*

A big bone means more than just a big hunk. And in fact, the way you look is shaped by your bones more than you would have thought. We already know that bones produce red and white blood cells, store calcium and help control blood pH. But that's more on the story: a new research shows that bones release a protein called osteocalcin involved in controlling sugar and fat absorption, thus acting like a hormone. Gerard Karsenty, a geneticist at Columbia University, had already showed that fat cells regulate bone mass through the hormone leptin, which controls the number of bone-building osteoblast cells. That's why his team checked if there is a feedback system in which bones could use their own hormones to influence fat metabolism. Osteocalcin was already known to store calcium into the skeleton, but none had seen this protein acting elsewhere in the body. But Karsenty's team noticed that mice lacking osteocalcin grow obese, receiving a hint. That's why the researchers engineered one group of mice to produce over-osteocalcin and another not to produce it at all. When eating regular food, the mice with extra osteocalcin presented lower-than-normal blood glucose levels and higher insulin levels than common mice. Insulin sensitivity too was higher: usually, more blood insulin decreases tissues' sensitivity to the hormone, complicating insulin treatment for diabetics. More osteocalcin meant also less fatty tissue than in mice nurtured with fat rich foods. Mice lacking osteocalcin developed type 2 diabetes when fed with regular food. "Because osteocalcin is secreted by one organ and acts on others, it fits the definition of a hormone, making bones part of the endocrine system. The findings could have important implications for the treatment of diabetes. Osteocalcin has a triple-punch effect, in that it raises both insulin levels and insulin uptake while keeping fat at bay. That makes it a promising therapy for middle-aged people who want to fight type 2 diabetes," said Karsenty. "Anyone interested in metabolism control can no longer ignore the skeleton." said Bjorn Olsen, a developmental biologist at Harvard Medical School in Boston.